

1987 VPT395-S1  
SEP87

MASTER  
M  
2

1987 VPT395-S1

Additional Models Covered:

VPT396

VPT397

VPT398

# RCA

## Video Cassette Recorder

## Supplement Service Data **VHS**

**RCA Corporation**  
**Consumer Electronics**

Technical Publications  
P.O. Box 1976 | Indianapolis, Indiana 46206

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Technical Publications

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Canada Stock Numbers:  
Add prefix 66 to all stock numbers.

### Purpose of this Supplement:

This is a supplement to VCR Basic Service Data File No. 1987 VPT395. Additional models covered by this supplement are the VPT396/7/8. Only changes from the basic service data are covered. Schematics, adjustments, etc. that are not listed in this service data are the same as those in the VPT395 Basic Service Data.

## SERVICE DATA INDEX

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## SAFETY NOTICE

### USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by stars (\*) on schematics and on the parts list in this Service Data and its bulletins. Before servicing this instrument, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in this Service Data.

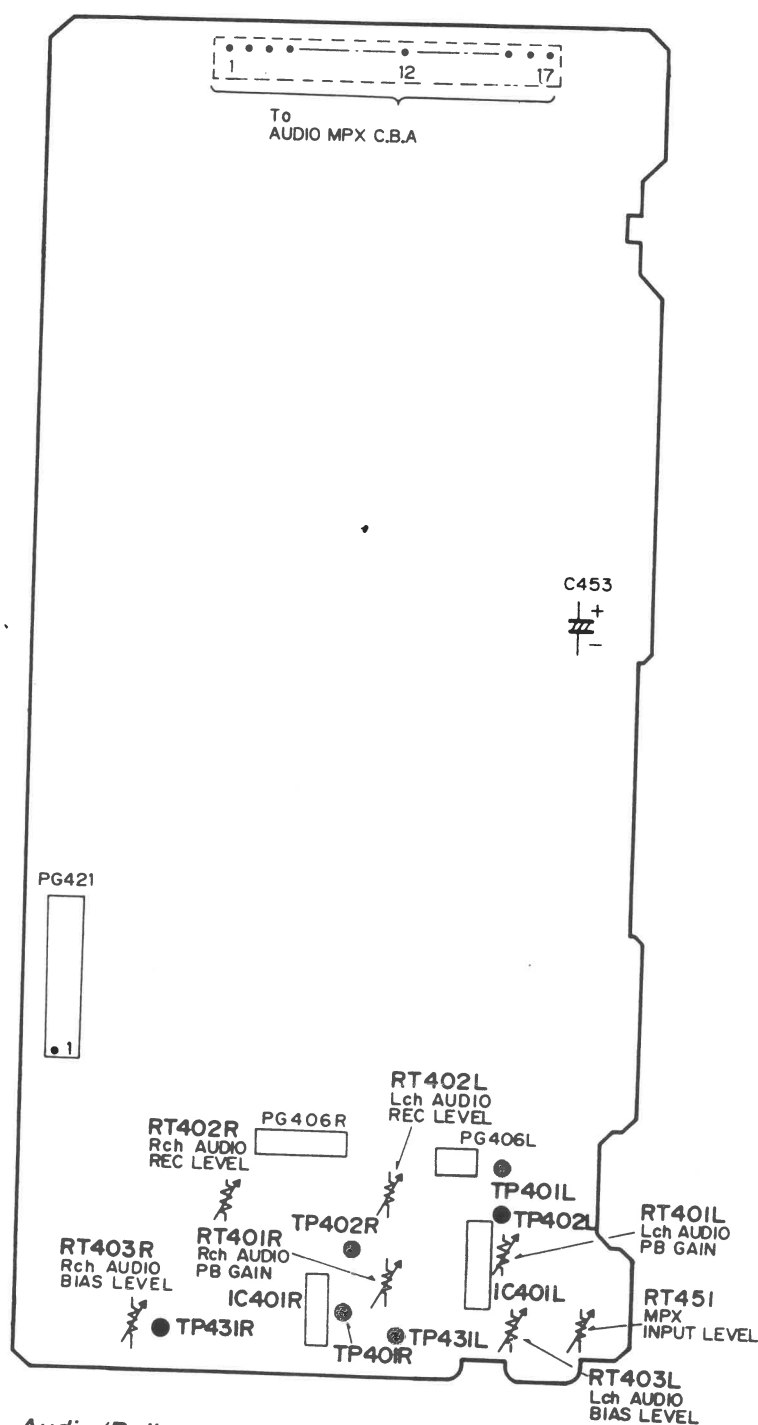
## ELECTRICAL ADJUSTMENTS (Continued)

This adjustments the free-running horizontal frequency to 15.734kHz.

1. Apply an NTSC color bar signal to the video input jack on the rear panel.
2. Set the VCR/TV select switch to "VCR" and the LINE/TUNER/SIMULCAST select switch to "LINE" position.
3. Connect a frequency counter to TP1G.
4. Adjust the ALC Control (RT93G) for  $15.734\text{kHz} \pm 0.2\text{kHz}$ .

**Note:** Set the input level switch of scope probe to 10:1.

### AUDIO/DOLBY NR PARTS LOCATION (Component Side)



**Audio/Dolby NR Parts Location (Component Side)**



# 1987 VPT395-S1 SEP87 REPLACEMENT PARTS

## BEFORE REPLACING PARTS, READ THE FOLLOWING:

**Approved Substitute Stock Numbers**—Before ordering stock numbers in the parts list, look for an approved substitute stock number in the current Price Schedule. This will minimize your service time and avoid ordering parts you already have in stock.

**PRODUCT SAFETY NOTE**—Components marked with a (\*) have special characteristics important to safety. Before replacing any of these components, read carefully the **PRODUCT SAFETY NOTICE** in the basic service data. Do not degrade the safety of the set through improper servicing. Although assemblies as a whole may not be marked with a (\*), replacement of assemblies with other assemblies not approved may result in a safety hazard.

**Warranty Status of Assemblies and Parts**—The warranty status of some assemblies and parts are indicated by one of the following Warranty Status Codes:

- Complete assembly not eligible for warranty exchange or replacement.
- ‡ Complete assembly eligible for warranty replacement with new or rebuilt unit.

All parts listed without a Warranty Status Code symbol are eligible for warranty replacement as discrete components.

Warranty replacement of cabinet parts requires prior approval.

Warranty Status and Specifications of assemblies and parts are subject to change without notice.

**\*NOTE:** When ordering components that are listed more than once in this parts list, always adhere to the serial number application guidelines given in the description column. If a serial number application guideline is not given, al-

ways select the component with a value, rating, other specifications, or identification marking(s) that match those of the corresponding component in the instrument you are servicing.

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
<b>VPT395-S1</b>			
<b>VPT396/397/398 SAME AS VPT395 PREVIOUSLY ISSUED IN 1987 VPT395 EXCEPT AS LISTED.</b>			
<b>COMPLETE ELECTRICAL ASSEMBLIES</b>			
	184804		CIRCUIT, IR RECEIVER
	182895		CIRCUIT, TIMER/INPUT KEY/ FUNCTION SW
<b>ELECTRICAL COMPONENTS</b>			
C52G	158323		CAP LYTC 47UF 10V
C66G	153188		CAP POLY 1500PF K 50V
C794	150737		CAPCD 270PF J 50V
C930	183149		CAPCD .01UF M 16V
C931	143871		CAPCD 100PF J 50V
CN725	187273		CONNECTOR & CABLE
Q509	184813		TRANSISTOR REC SW
R529	151436		RES CF 1/8W 5% 5.6K
R62G	155146		RES CCF 1/8W 5% 10K
R750	151439		RES CF 1/8W 5% 330R
R771	151456		RES CF 1/8W 5% 390R
X751	177246		CRYSTAL
ZD754	181524		DIODE ZENER
<b>MECHANICAL ASSEMBLY</b>			
<b>NOTE: SOME PARTS WITH ITEM NUMBERS ON EXPLODED VIEWS MAY NOT BE AVAILABLE SEPARATELY, OR MAY BE AVAILABLE ONLY AS PART OF AN ASSEMBLY.</b>			
101	182629		COVER, TOP (BEFORE SN723...) VPT396
101	183192		COVER, TOP (AFTER SN723...) VPT396

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
101	182644		COVER, TOP (BEFORE SN723...) VPT397
101	183194		COVER, TOP (AFTER SN723...) VPT397
101	182647		COVER, TOP (BEFORE SN723...) VPT398
101	183193		COVER, TOP (AFTER SN723...) VPT398
107	182872		PANEL, FRONT ASSEMBLY (BEFORE SN723...) VPT396
107	183205		PANEL, FRONT ASSEMBLY (AFTER SN723...) VPT396
107	182871		PANEL, FRONT ASSEMBLY (BEFORE SN723...) VPT397
107	183206		PANEL, FRONT ASSEMBLY (AFTER SN723...) VPT397
107	182870		PANEL, FRONT ASSEMBLY (BEFORE SN723...) VPT398
107	183207		PANEL, FRONT ASSEMBLY (AFTER SN723...) VPT398
108	182868		DOOR, CONTROL
112	180276		KNOB
120	182867		HOLDER
126	183033		CIRCUIT, TUNER/IF/ DEMODULATOR NON-STOCK PART
131	182876		HOLDER, LED
133			NON-STOCK PART
134			NON-STOCK PART
136			NON-STOCK PART
138	157094		WASHER
228	157038		ROLLER, GUIDE
239	182888		* MOTOR, CAPSTAN
311	182011		* MOTOR, LOADING
401	182869		HOLDER
412	183153		BRACKET
907	156741		SCREW, 3MMD X 6MM

## INCLUDED ACCESSORIES

BOOK, INSTRUCTION 2826763-1  
VPT396  
BOOK, INSTRUCTION 2826765-1  
VPT397  
BOOK, INSTRUCTION 2826767-1  
VPT398

## ABBREVIATIONS

<b>ACC</b> —Automatic Color Control	<b>M</b> —Master Microprocessor
<b>ACK</b> —Automatic Color Killer	<b>M.STOP</b> —Memory Stop
<b>ADD</b> —Adder	<b>MOD</b> —Modulator
<b>AFC</b> —Automatic Frequency Control	<b>M. BRAKE</b> —Main Brake
<b>AFT</b> —Automatic Frequency Tuning	<b>MM</b> —Monostable Multivibrator
<b>AGC</b> —Automatic Gain Control	<b>MSC</b> —Motor Servo Control
<b>ALC</b> —Automatic Level Control	<b>NR</b> —Noise Reduction
<b>APC</b> —Automatic Phase Control	<b>OSC</b> —Oscillator
<b>BG</b> —Burst Gate	<b>Pause (L)</b> —Pause Signal (Low Active)
<b>BH</b> —Power Supply for Selecting VHF High Band	<b>POWER CONT.</b> —Power Control
<b>BL</b> —Power Supply for Selecting VHF Low Band	<b>PB</b> —Playback
<b>BM</b> —Power Supply for Selecting VHF Mid Band	<b>PB</b> —Voltage Present in All modes Except Playback
<b>BPF</b> —Band Pass Filter	<b>PG</b> —Pulse Generator
<b>BS</b> —Power Supply for Selecting VHF Super Band	<b>Play (H)</b> —Play Signal (High Active)
<b>BU</b> —Power Supply for Selecting UHF Band	<b>PWM</b> —Pulse Width Modulation
<b>BUF</b> —Buffer Amplifier	<b>REC</b> —Record
<b>CAPST</b> —Capstan	<b>REC</b> —Voltage Present in All Modes Except Record
<b>CFG</b> —Capstan Frequency Generator	<b>REF</b> —Reference
<b>CH</b> —Channel	<b>REG</b> —Regulator
<b>C.LOAD END</b> —Cassette Loading End	<b>REJ</b> —Rejector
<b>C.LOAD ON</b> —Cassette Loading ON	<b>REV</b> —Reverse
<b>C.PAUSE</b> —Camera Pause	<b>REW</b> —Rewind
<b>C.REVERSE</b> —Count Reverse	<b>RF</b> —Radio Frequency
<b>CHROMA</b> —Chrominance	<b>RM</b> —Reel Motor
<b>CO</b> —Counter Microprocessor	<b>R. CH-UP</b> —Right Channel Up
<b>CST</b> —Cassette	<b>S</b> —Slave Microprocessor
<b>CTL</b> —Control Pulse	<b>SEP</b> —Separator
<b>C.UNLOAD END</b> —Cassette Unloading End	<b>S/H</b> —Sample and Hold
<b>CYL</b> —Cylinder	<b>SIF</b> —Sound Intermediate Frequency
<b>D/A</b> —Digital to Analog	<b>SP/LP/SLP</b> —Standard Play/Long Play/Super Long Play
<b>DET</b> —Detector	<b>S.REEL</b> —Supply Reel Sensor
<b>DE-EMPHA</b> —De-emphasis	<b>SRV</b> —Servo
<b>DDC</b> —Direct Drive Cylinder	<b>SW 30Hz</b> —Head Switching Pulse
<b>DL</b> —Delay Line	<b>SYSCON</b> —System Control
<b>DO</b> —Drop Out	<b>TP</b> —Test Point
<b>DOC</b> —Drop Out Compensator	<b>TPZ</b> —Trapezoid
<b>D/W</b> —Dark/White	<b>T. BRAKE</b> —Take-up Brake
<b>DEMOD</b> —Demodulator	<b>TI</b> —Timer Microprocessor
<b>E-E</b> —Electronics-to-Electronics	<b>T. REEL</b> —Take-up Reel Sensor
<b>E-E</b> —Voltage Present In All Modes Except E-E	<b>TRS</b> —Transfer
<b>EMPH</b> —Emphasis	<b>TU</b> —Tuning Microprocessor
<b>EQ</b> —Equalization	<b>μP</b> —Microprocessor
<b>FF</b> —Fast Forward or Flip Flop	<b>VCO</b> —Voltage Controlled Oscillator
<b>FG</b> —Frequency Generator	<b>Vert.Drive Pulse (V.DRV)</b> —Verical Drive Pulse
<b>FM</b> —Frequency Modulation	<b>V-F</b> —Voltage to Frequency
<b>FSI</b> —Field Start Inhibit	<b>VHS</b> —Video Home Systems
<b>F-V</b> —Frequency to Voltage Converter	<b>V-REF</b> —Voltage Reference
<b>GEN</b> —Generator	<b>VSS</b> —Vertical Sync Separator
<b>HD</b> —Horizontal Drive	<b>Vss</b> —Voltage Super Source
<b>HPF</b> —High Pass Filter	<b>VT</b> —Tuning Voltage
<b>HSS</b> —Horizontal Sync Separator	<b>VT-U</b> —Tuning Voltage—UHF
<b>IF</b> —Intermediate Frequency	<b>VT-V</b> —Tuning Voltage—VHF
<b>INDI</b> —Indicator	<b>V-V</b> —Video-to-Video
<b>IR</b> —Infrared Rays	<b>VXO</b> —Voltage Controlled Crystal Oscillator
<b>LM</b> —Loading Motor	<b>XPR</b> —Express
<b>LP(H)</b> —Long Play Signal High	<b>Y/C</b> —Luminance/Chrominance
<b>LPF</b> —Low Pass Filter	

## INSTRUMENT DISASSEMBLY

### Top Cover Removal

1. Remove two (2) screws located at the rear of the top cover.
2. Carefully lift the back of the top cover and slide to the rear to remove.

### Bottom Cover Removal

1. Remove five (5) screws securing the bottom cover and remove.

### Front Panel Removal (Fig. 1)

1. Remove the top and bottom covers.
2. Remove the front panel as shown in Fig. 1.

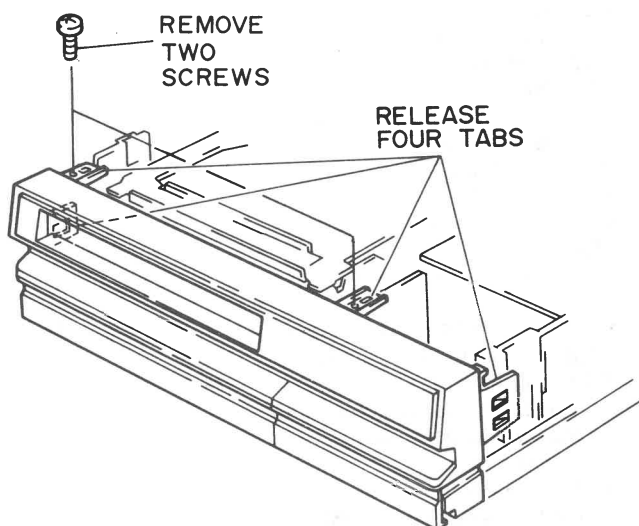


Fig. 1 Front Panel Removal

### Main Circuit Board Release/Service Position (Fig. 2, 3)

To release the Main circuit board refer to Fig. 2.

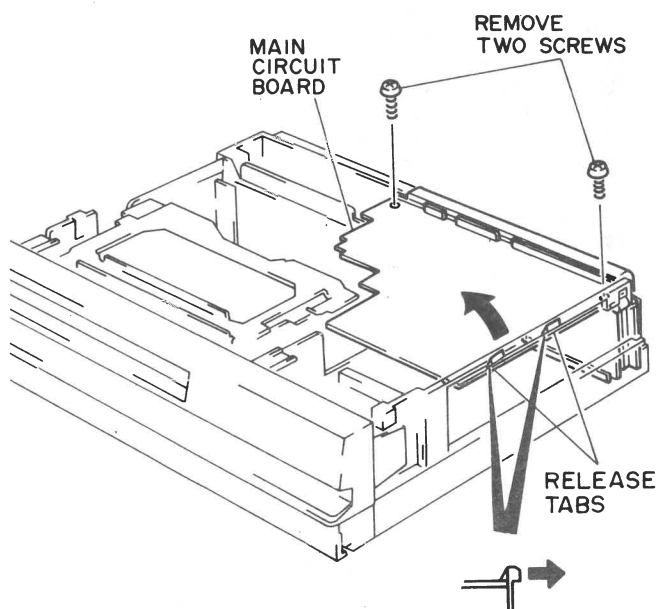


Fig. 2 Main Circuit Board Release

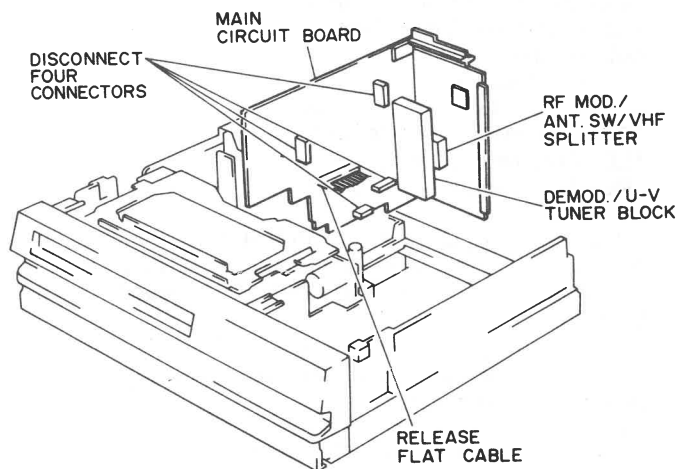


Fig. 3 Service Position

### Rear Panel Removal (Fig. 4)

1. Remove the top cover.
2. Release the Main circuit board and refer to Fig. 4.

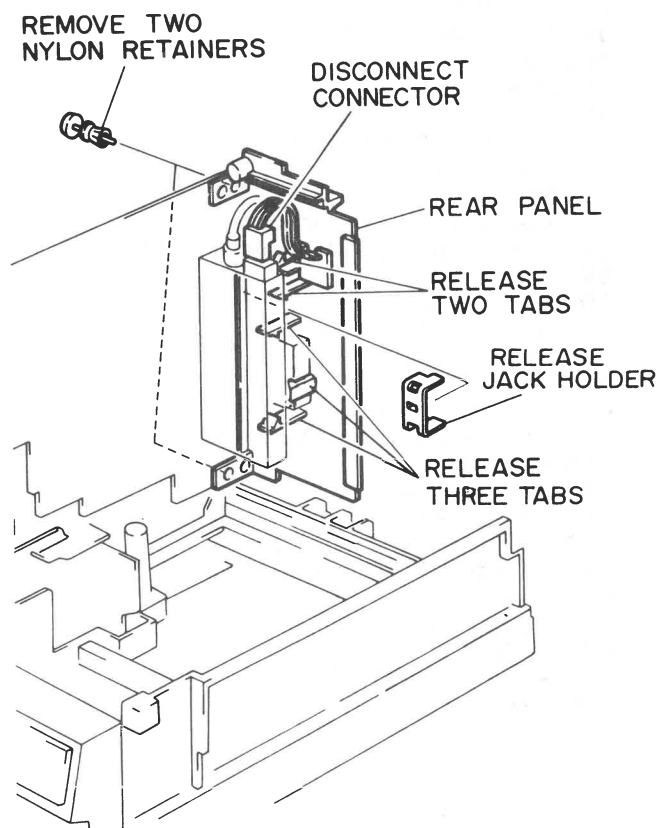


Fig. 4 Rear Panel Removal

## INSTRUMENT DISASSEMBLY (Continued)

### Timer/Input Key/Function Switch Circuit Board Removal (Fig. 5)

1. Release the Main circuit board and refer to Fig. 5.

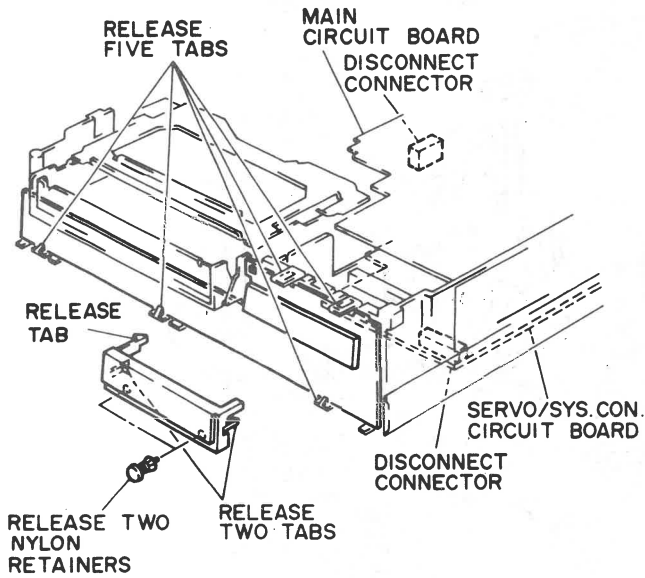


Fig. 5 Timer/Input Key/Function Switch Circuit Board Removal

### Servo/System Control Circuit Board Removal (Fig. 6)

1. Remove the bottom cover and refer to Fig. 6

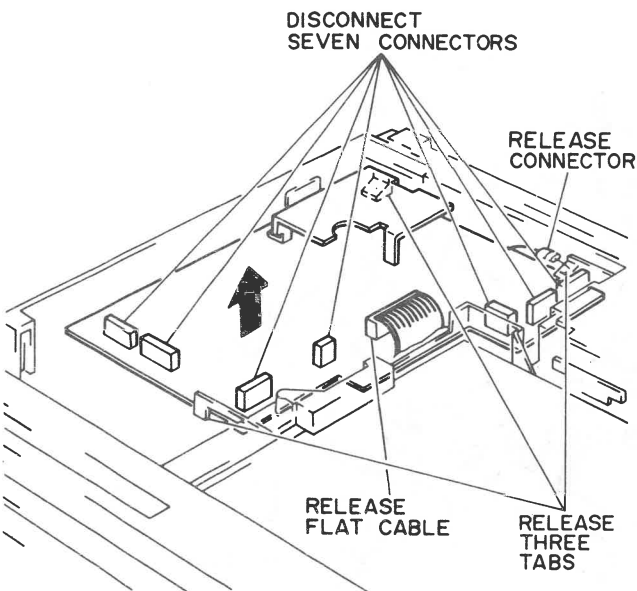


Fig. 6 Servo/System Control Circuit Board Removal

### Regulator/Power Supply Block Removal (Fig. 6)

1. Remove the top and bottom covers and refer to Fig. 7.

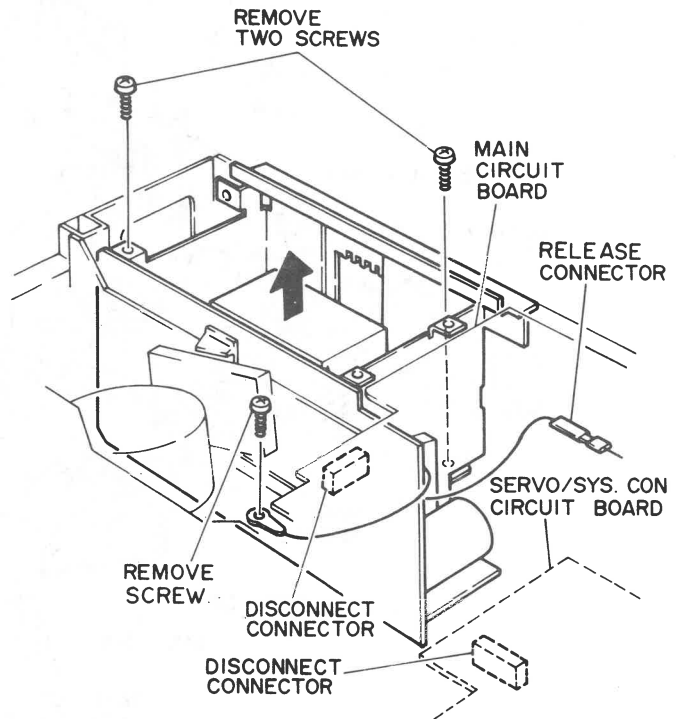


Fig. 7 Regulator/Power Supply Block Removal

### Pre-amp/Head Switch Circuit Board Removal (Fig. 8)

1. Remove the top cover and refer to Fig. 8.

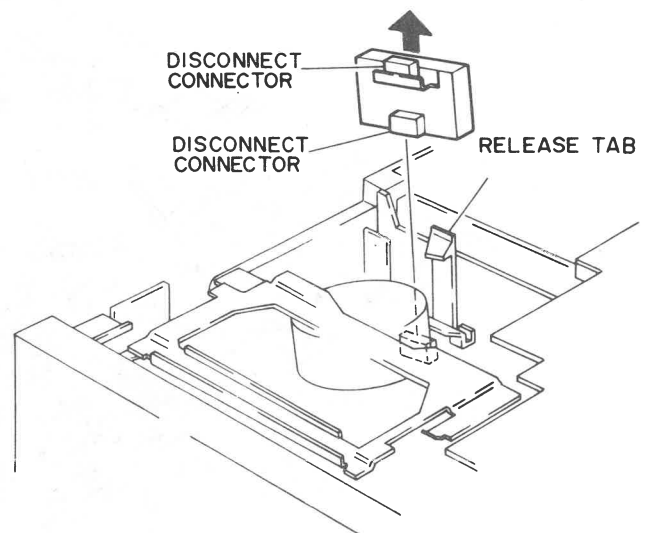


Fig. 8 Pre-amp/Head Switch Circuit Board Removal

## MECHANICAL DISASSEMBLY

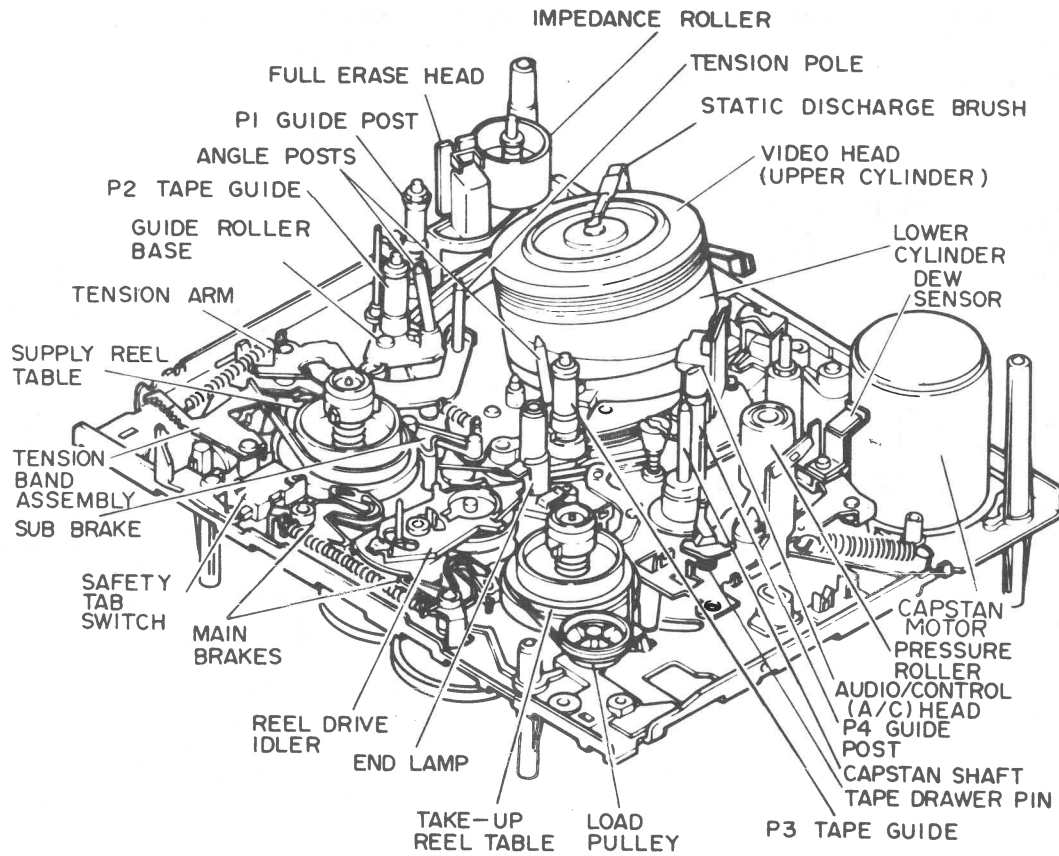


Fig. 9 Tape Transport Mechanism (Top View)

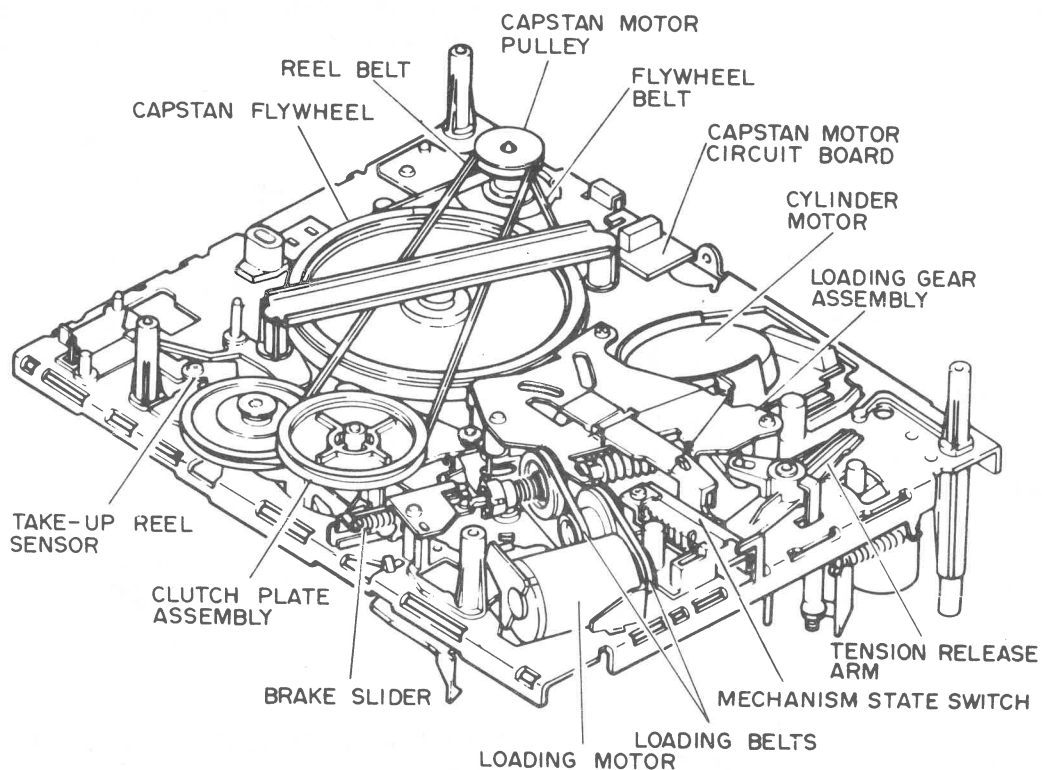


Fig. 10 Tape Transport Mechanism (Bottom View)

## MECHANICAL DISASSEMBLY (Continued)

### Cassette Loading Mechanism Assembly Removal (Fig. 11)

1. Remove the top, bottom and front covers.
2. Release the Main circuit board.
3. Disconnect connector (PG20) from the cassette loading motor circuit board.
4. Remove two (2) screws securing the cassette loading mechanism assembly.
5. Lift the rear of the cassette loading mechanism up and to the rear of the VCR to release the front of the mechanism.

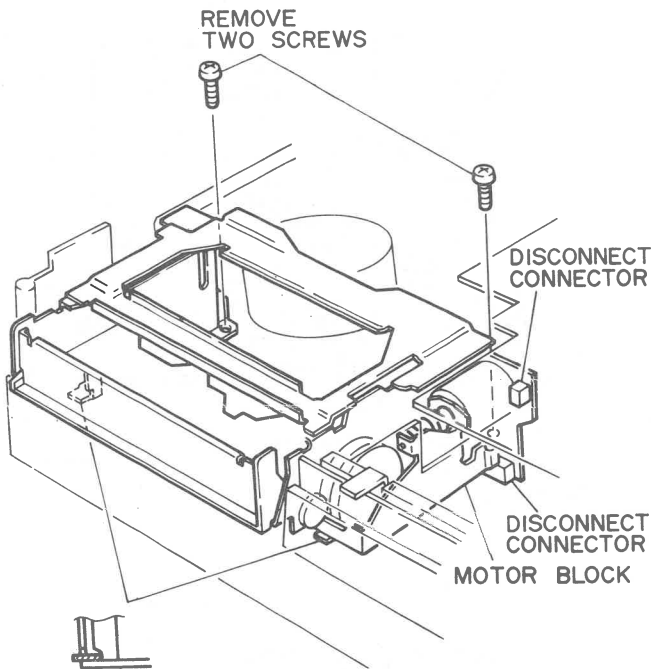


Fig. 11 Cassette Loading Mechanism Removal

### Cassette Loading Mechanism Disassembly (Fig. 13 thru 16)

1. Remove the cassette loading mechanism assembly.
2. Release the tab holding the supply end sensor and release the wire from the retainer.
3. Remove the motor block and chassis holder (Fig. 13).

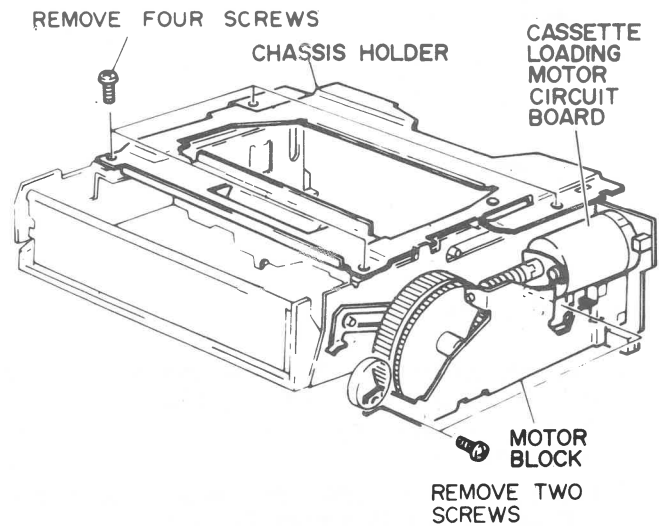


Fig. 13 Motor Block Removal

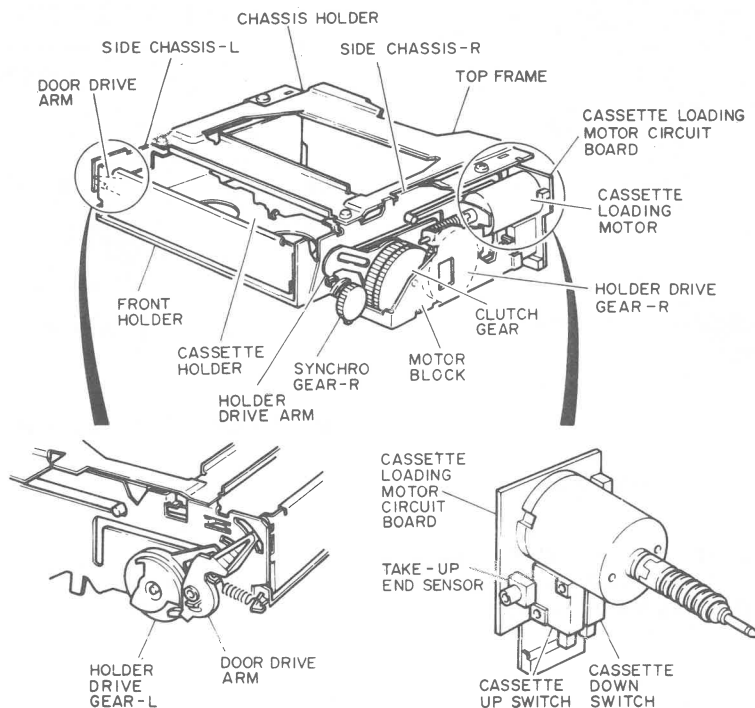


Fig. 12 Cassette Loading Mechanism Identification

## MECHANICAL DISASSEMBLY (Continued)

4. Pull the front holder on the right of the cassette door to the right to remove the cassette door (Fig. 14).

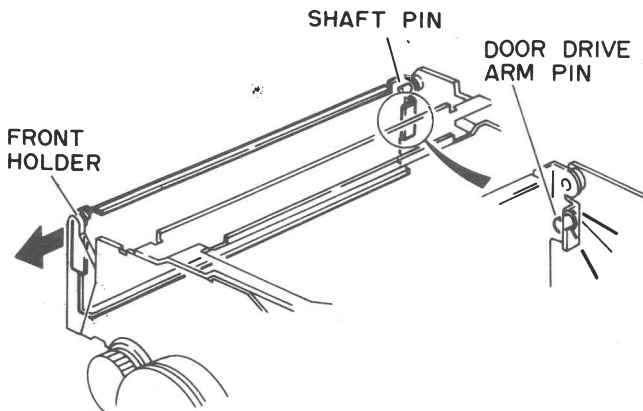


Fig. 14 Cassette Door Removal

5. Remove the spring and release the two (2) tabs holding the door drive arm (Fig. 15).
6. Remove the two (2) screws holding the front holder (Fig. 15).
7. Pull the left and right side chassis's apart and remove the cassette holder (Fig. 15).

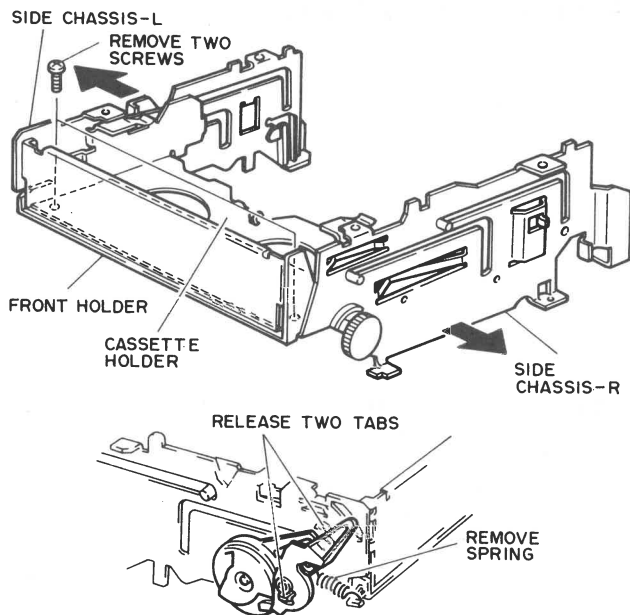


Fig. 15 Front Holder/Cassette Holder Removal

**Note:** Assemble the cassette loading mechanism using the reverse of disassembly procedures. Care should be taken in the following areas:

- The cassette holder should be securely inserted into the holder drive arm when installing the cassette holder to the (L/R) side chassis (Fig. 16).
- Align the timing marks with drive gear when installing the (L) synchro gear (Fig. 16).
- Insert the shaft pin and door drive arm pin into the two (2) grooves on the left of the cassette door during installation. (Fig. 14).
- Install the motor block while aligning the two (2) timing marks on the (R) synchro gear and clutch gear (Fig. 16).

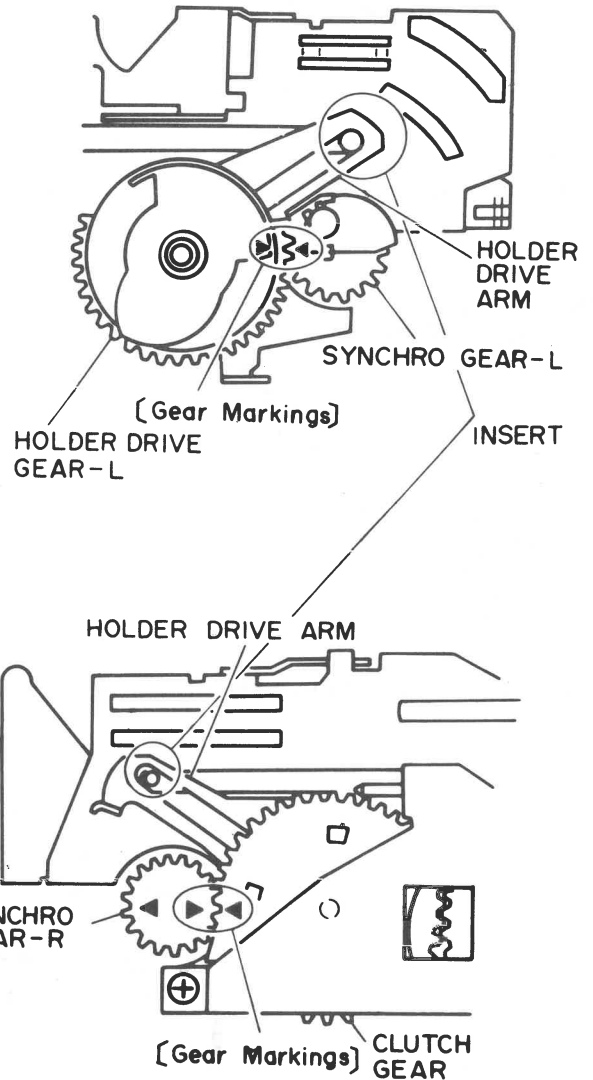


Fig. 16 Door Drive Arm/Gear Alignment



## MECHANICAL DISASSEMBLY (Continued)

**Motor Block Disassembly** (Fig. 17, 18)

1. Remove the cassette loading mechanism motor block.
2. Remove the two (2) springs and then remove the two (2) switch levers.
3. Pull out the clutch gear.
4. Remove the screw from the switch lever holder and remove the switch lever holder.
5. Remove the drive gear.

**Note:** Use the reverse of the disassembly procedure to reassemble the cassette loading mechanism motor block. Care should be taken in the following areas:

- When installing the clutch gear, carefully align the timing marks on the clutch and drive gear. (Fig. 18)
- Insert the switch levers into the grooves inside the clutch gear.

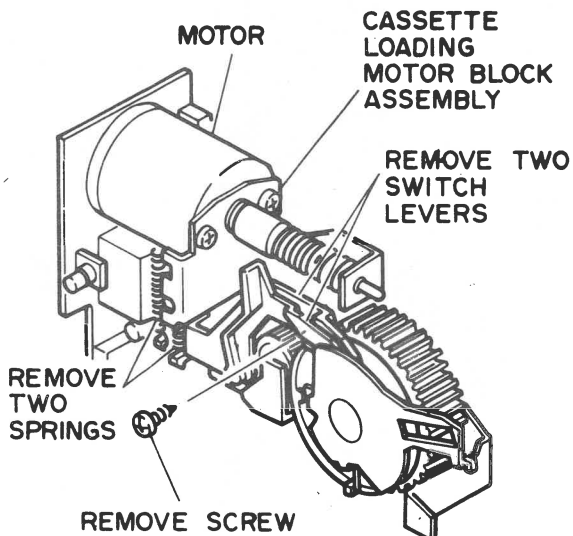


Fig. 17 Motor Block Disassembly

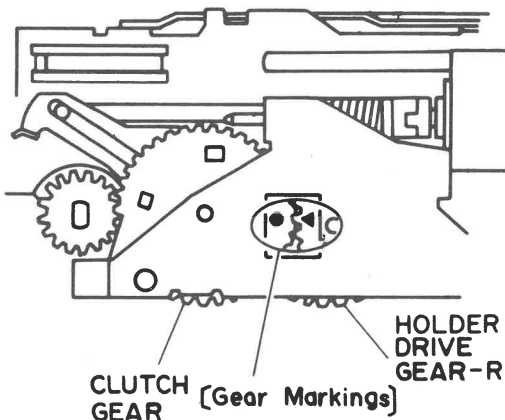


Fig. 18 Motor Block Timing Mark Alignment

**Cassette Loading Motor Removal** (Fig. 19)

1. Remove the cassette loading motor block.
2. Remove the two (2) screws from the motor block chassis and pull the switch lever down to remove the motor.

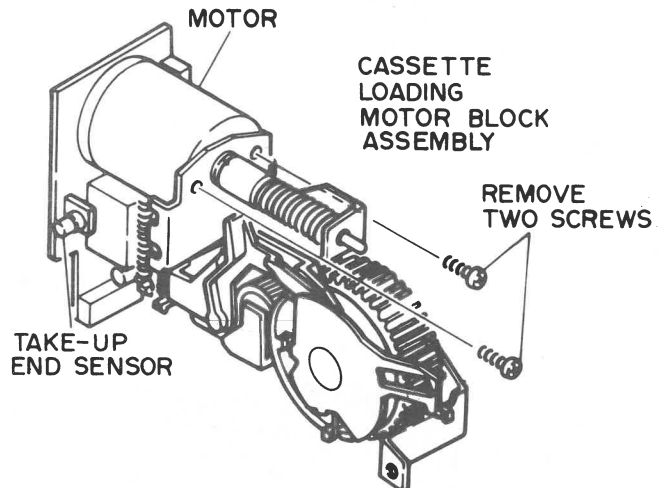


Fig. 19 Cassette Loading Motor Removal

**Upper Cylinder Removal** (Figs. 20, 21)

1. Remove the preamp/headswitch circuit board and cassette loading mechanism assembly.
2. Remove one (1) screw holding the static discharge brush.
3. Remove two (2) screws and pull up on the upper cylinder to remove.
4. Upon reinstallation, align the video heads connected to the blue connector of the upper cylinder with the arrow mark on the lower cylinder (Fig. 21).

**Note:** Be careful not to touch the video heads during removal or installation. Perform the following adjustments after replacing the upper cylinder.

- Tracking Preset Adjustment
- A/C Head Horizontal Position Adjustment
- PG Shifter Adjustment

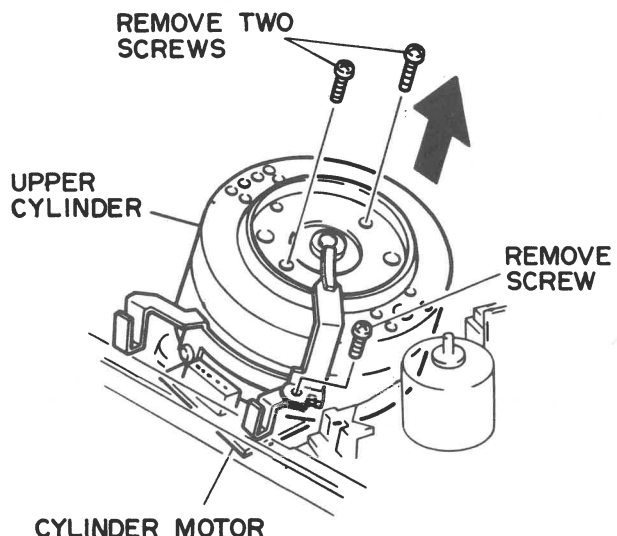


Fig. 20 Upper Cylinder Removal



## MECHANICAL DISASSEMBLY (Continued)

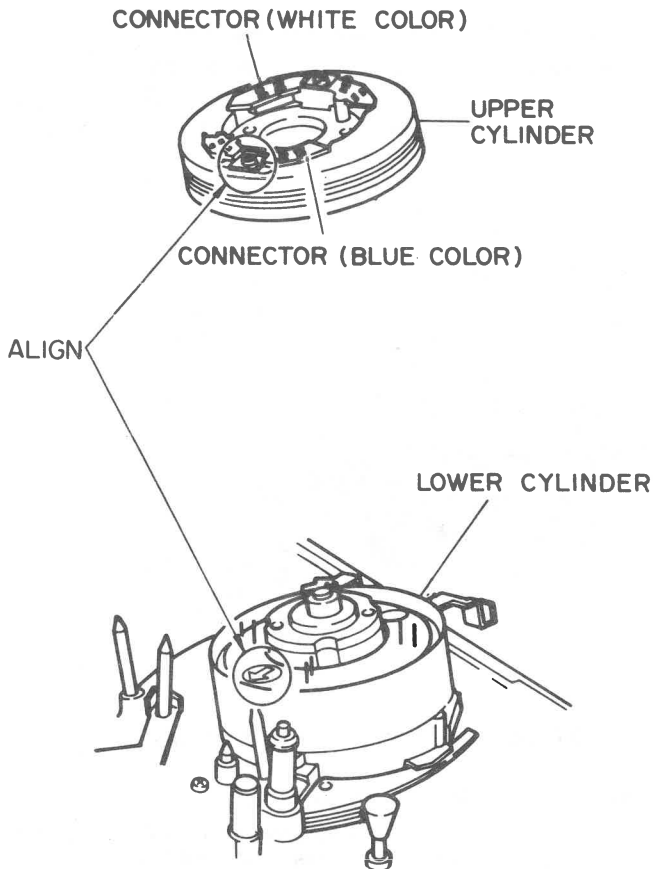


Fig. 21 Upper Cylinder Alignment

**Full Erase (FE) Head/Impedance Roller Removal (Fig. 22)**

1. Remove the FE Head/Impedance roller base spring.
2. Disconnect the connector from the FE head.
3. Remove the nut at the top of the P1 guide post and remove the P1 guide post, guide post spring and washer.

4. Pull the FE Head/Impedance roller straight up to remove.
5. Remove the screw securing the FE head at the rear of the base.
6. After replacement/reinstallation of the FE head, clean tape path surfaces of the FE head and P1 guide post.

**Note:** Upon replacement and/or reinstallation, perform the P1 guide post height adjustment.

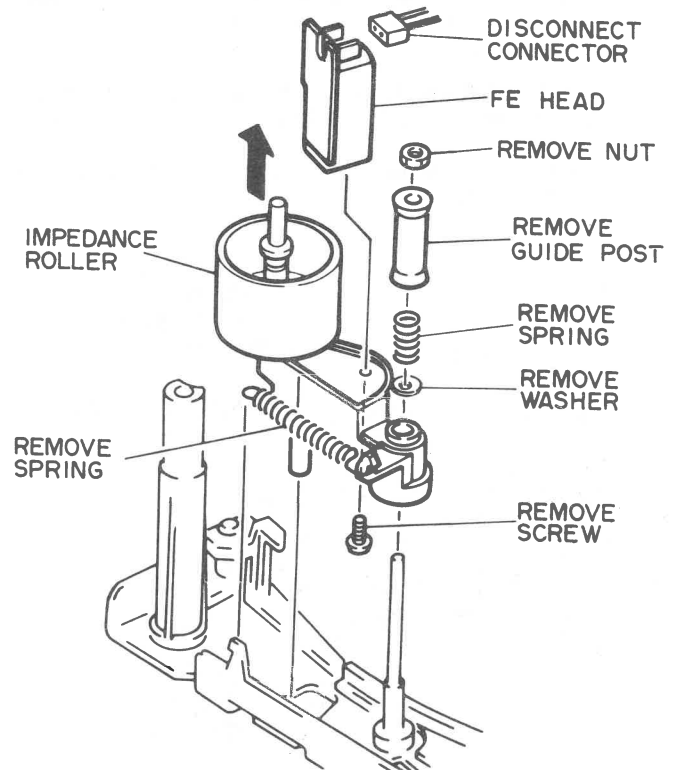


Fig. 22 Full Erase Head/Impedance Roller Removal

## MECHANICAL DISASSEMBLY

### Audio/Control (A/C) Head Removal (Fig. 23)

1. Disconnect the connector from the A/C head.
2. Remove the nut holding the A/C head base and remove the washer.
3. Pull up on the A/C head assembly to remove.
4. After replacement and/or reinstallation of A/C head, clean the tape contact surface of the head.

**Note:** After reinstallation, hook the spring between A/C head base and chassis. Be sure the tip of the head base screw is approximately 3-4mm above the top of the head base after installing the A/C head assembly. Next, perform the following adjustments.

- A/C Head Height, Tilt and Azimuth Adjustments
- A/C Head Horizontal Position Adjustment
- Audio Playback Gain Adjustment
- Audio Bias Level Adjustment

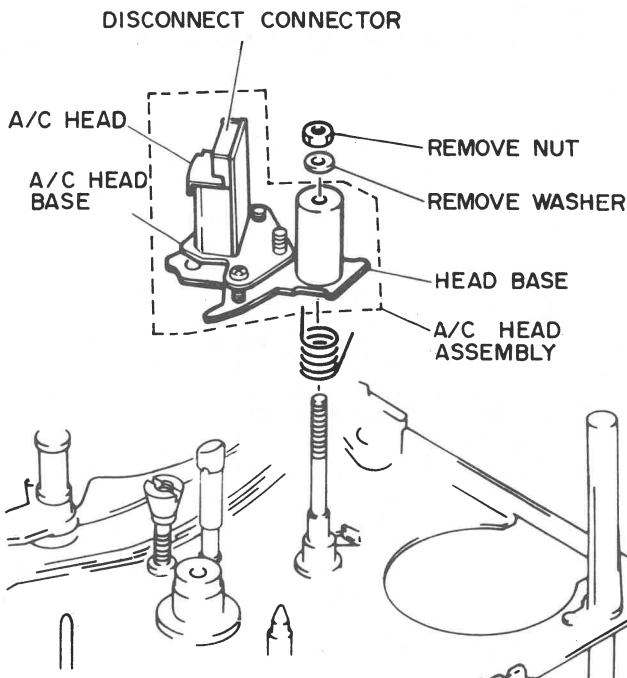
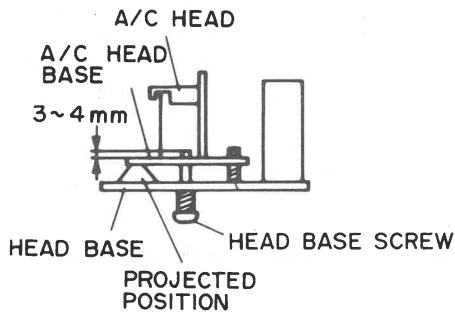


Fig. 23 Audio/Control Head Removal

### Cylinder Motor Assembly Removal

1. Remove the top and bottom covers.
2. Disconnect connector from the lower cylinder motor (bottom side).
3. Remove the preamp/headswitch circuit board.
4. Remove the three (3) screws (from bottom side) securing the cylinder motor.

**CAUTION:** There is very little clearance between the cylinder motor and the mounting base. Use extreme care when removing or replacing the motor. DO NOT TOUCH the video heads during servicing or severe damage to heads may result.

5. Carefully pull the cylinder motor assembly up to remove.
6. Wrap the motor in a soft cloth if the same motor is to be reinstalled. Clean the motor tape guide surface and upper cylinder after motor is replaced/reinstalled.

**Note:** Upon reinstallation of the cylinder motor, perform the "Interchangeability Confirmation".

### Capstan Motor Removal

1. Remove the bottom cover.
2. Remove the reel belt and the capstan belt.
3. Remove the two (2) screws holding the capstan motor bracket.
4. Disconnect the connector from the capstan motor board.

**Note:** Upon replacement and/or reinstallation of the capstan motor, perform the 30Hz Reference Frequency Adjustment.

### Loading Motor Removal

1. Remove the bottom cover.
2. Remove the loading belt and disconnect connector (PG3).
3. Remove screw securing the loading motor.

**Note:** Upon replacement and/or reinstallation of the loading motor, insure the tab on the loading motor bracket is positioned in the slot on the chassis.

### Dew Sensor Removal

1. Remove top and bottom covers.
2. Remove screw securing the dew sensor.
3. Disconnect connector (PG905) from the Servo/System Control circuit board.

## MECHANICAL DISASSEMBLY (Continued)

### Safety Tab Switch Removal

1. Remove top and bottom covers.
2. Disconnect connector (PG141).
3. Remove screw securing safety tab switch.

### Mechanism State Switch Removal

1. Remove screw securing the mechanism state switch.
2. Disconnect the connector (PG142).

**Note:** Upon replacement and/or reinstallation of the state sense switch, place the switch lever in the groove of the switch slider and perform the Mechanism State Switch Adjustment procedure.

### Main Brake (Supply and Take-up) Removal (Fig. 24)

1. Remove the cassette loading mechanism assembly.
2. Remove the main brake spring.
3. Release tabs holding the supply and take-up main brakes.

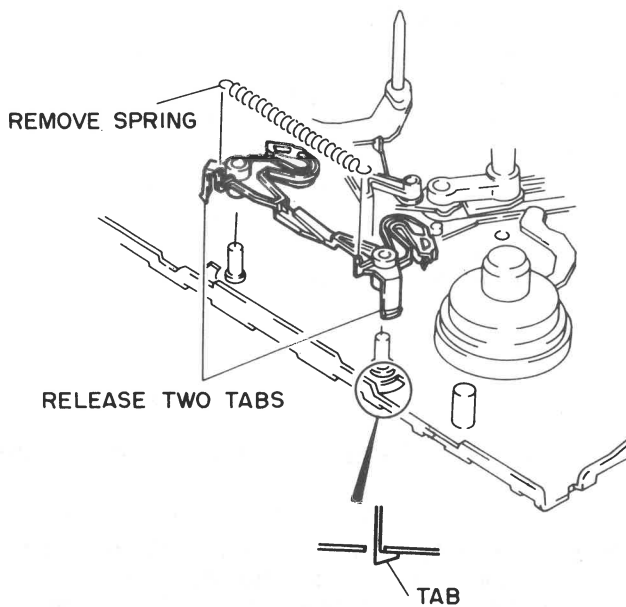


Fig. 24 Supply and Take-up Main Brake Removal

### Sub Brake Removal (Fig. 25)

1. Remove the cassette loading mechanism assembly.
2. Remove the sub brake spring.
3. Carefully pull the sub brake off the retaining post.

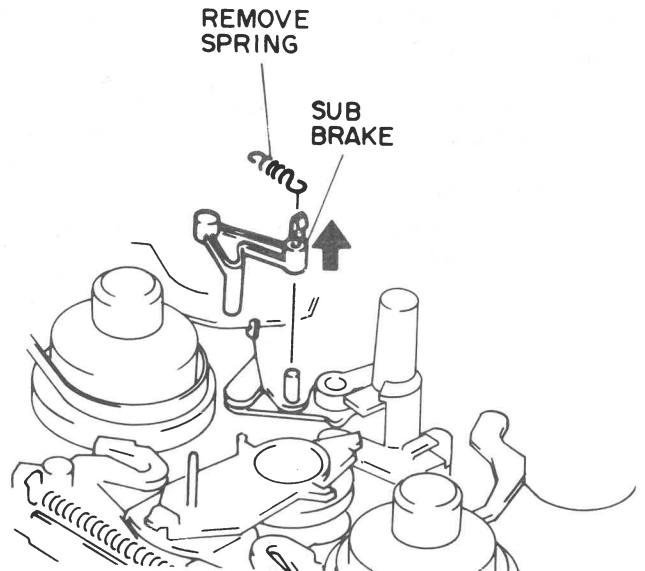


Fig. 25 Sub Brake Removal

### Reel Drive Idler Removal (Fig. 26)

1. Remove the cassette loading mechanism assembly.
2. Release tab and pull up on the idler to remove.

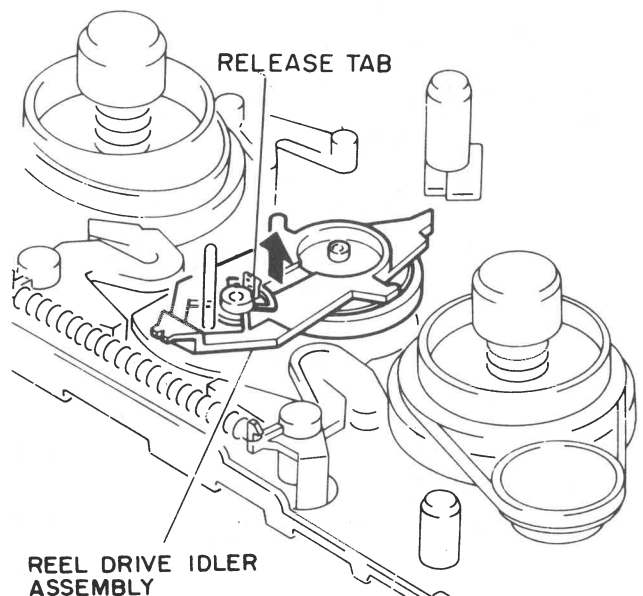


Fig. 26 Reel Drive Idler Removal

## MECHANICAL DISASSEMBLY (Continued)

### Tension Band/Tension Arm Removal (Fig. 27)

1. Remove the cassette loading mechanism assembly.
2. Remove the tension arm spring and the screw holding the tension band.
3. Release the tab securing the tension arm and remove the tension band/tension arm assembly.
4. After replacement and/or reinstallation of the tension arm/tension band, clean the tension post.

**Note:** Upon reinstallation, perform the following adjustments:

- Tension Arm Position Adjustment
- Back Tension Adjustment

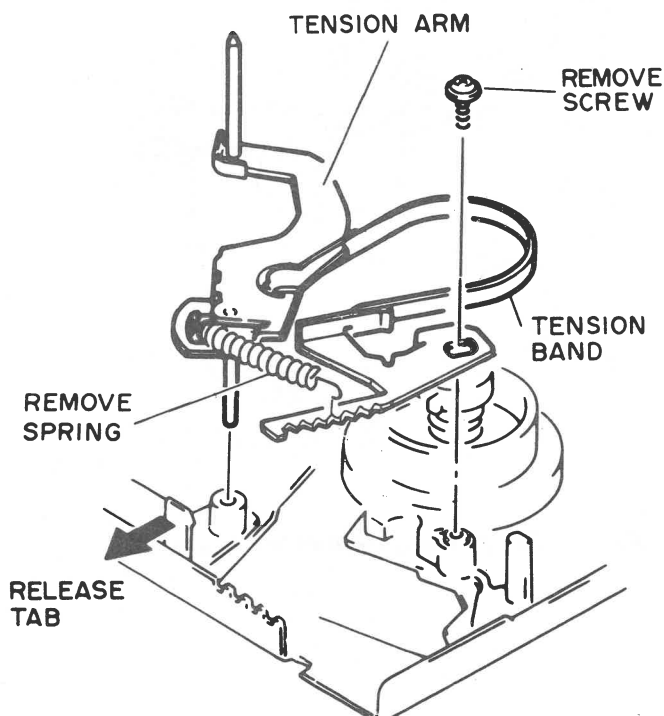


Fig. 27 Tension Band/Tension Arm Removal

### Supply Reel Table Removal

1. Remove the cassette loading mechanism assembly.
2. Remove the sub brake.
3. Remove the tension arm/tension band.
4. Remove the retaining washer from the supply reel spindle and remove table.

**Note:** Pay particular attention to the washer and collar under the supply reel table. Upon reinstallation, use a new retaining washer for the reel spindle and perform the reel table height adjustment.

### Take-up Reel Table Removal

1. Remove the take-up reel belt.
2. Remove the retaining washer from the take-up reel spindle and remove take-up table.

**Note:** Pay particular attention to the washer under the take-up reel table. Upon reinstallation, use a new retaining washer for the reel spindle and perform the reel table height adjustment.

### Load Pulley Removal

1. Remove the take-up reel belt.
2. Remove the retaining washer from the load pulley spindle.

**Note:** Upon reinstallation, use a new retaining washer for the load pulley spindle.

### Pressure Roller Arm Assembly Removal (Fig. 28)

1. Remove the washer securing the pressure roller arm assembly and pull the assembly up.
2. To remove pressure roller from arm assembly, remove one (1) screw securing the pressure roller.

**Note:** After replacement and/or reinstallation of the pressure roller, clean the tape contact surface of the pressure roller.

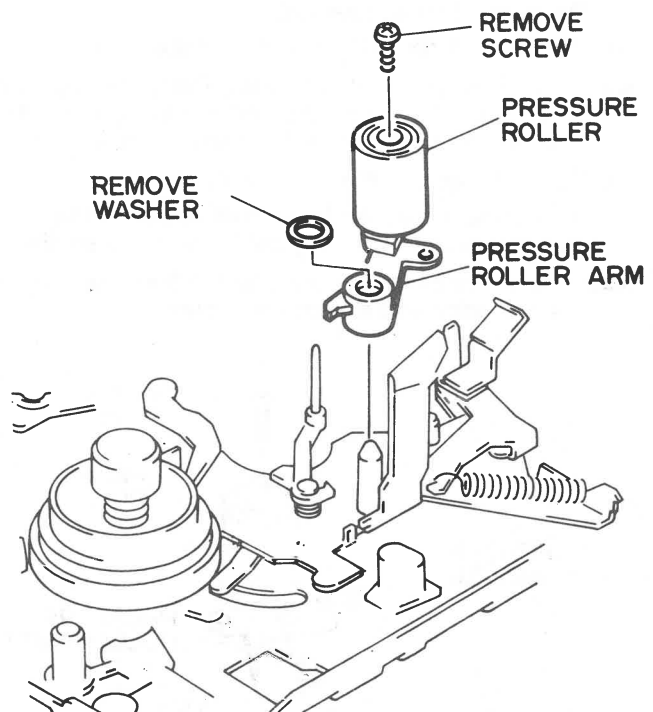


Fig. 28 Pressure Roller Arm Assembly Removal

### P1 Guide Post Removal

1. Remove the nut securing the P1 guide post.
2. After replacement and/or reinstallation of the P1 guide post, clean the tape contact surface of the post.

**CAUTION:** During reinstallation, verify that the spring and washer under the P1 guide post is installed correctly. After installation of guide post, perform the P1 guide post adjustment.

## MECHANICAL DISASSEMBLY (Continued)

### P4 Guide Post Removal

1. Remove cap and nut at the top of the P4 guide post.
2. Pull guide post straight up to remove.
3. After replacement and/or reinstallation of the P4 guide post, clean the tape contact surface and perform the P4 guide post adjustment.

### P2 and P3 Tape Guide Removal

1. Loosen the hex screws at the bases of the tape guides.
2. To remove the tape guides, turn guides counterclockwise.
3. After replacement and/or reinstallation of the P2/P3 tape guides, clean the tape contact surfaces.

**Note:** Upon reinstallation, perform the P2/P3 tape guide adjustment procedure.

### Capstan Flywheel Removal (Fig. 28)

1. Remove the top and bottom covers.
2. Remove the two (2) screws securing the capstan flywheel retaining bracket.
3. Remove the reel belt and the capstan belt.

**Note:** An oil seal is located on the capstan shaft on the top side of the chassis and a washer is on the shaft on the bottom side of the chassis.

4. Carefully remove the capstan flywheel.
5. After replacement and/or reinstallation of the capstan flywheel, thoroughly clean the capstan shaft.

**Note:** Upon reinstallation, perform the 30Hz Reference Frequency adjustment procedure.

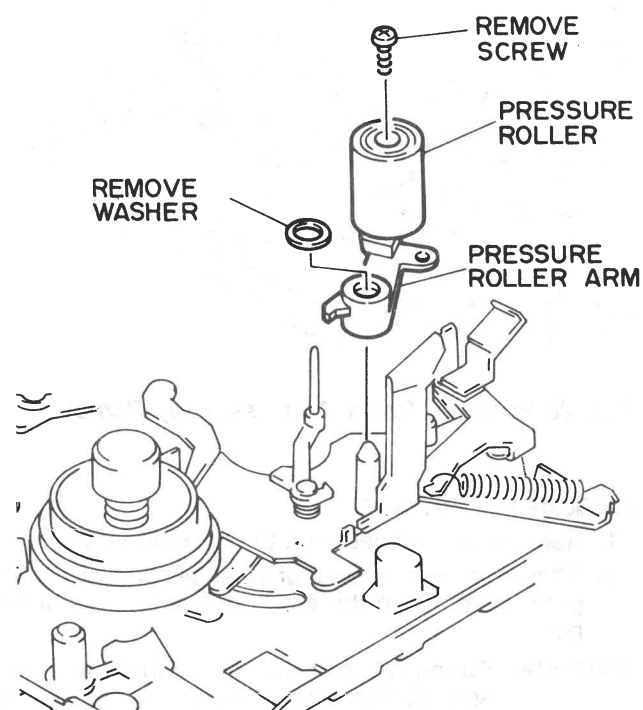


Fig. 28 Capstan Flywheel Removal

### Clutch Plate Assembly Removal (Fig. 29)

1. Remove the top and bottom covers.
2. Remove the reel drive idler and reel belt.
3. Remove two (2) screws securing the clutch plate assembly, and remove assembly.

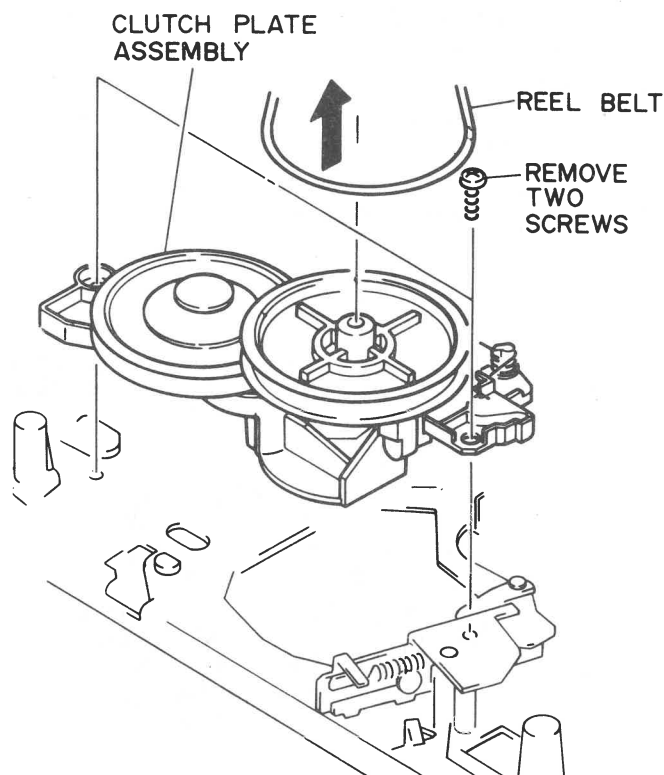


Fig. 29 Clutch Plate Assembly Removal

## MECHANICAL DISASSEMBLY (Continued)

**Brake Slider Removal (Fig. 30)**

1. Remove the top and bottom covers.
2. Remove the reel drive idler.
3. Remove the clutch plate assembly.
4. Remove the screw securing the brake slider.

**Note:** Upon reinstallation, insert the brake drive arm pin in the groove of the slider operation arm.

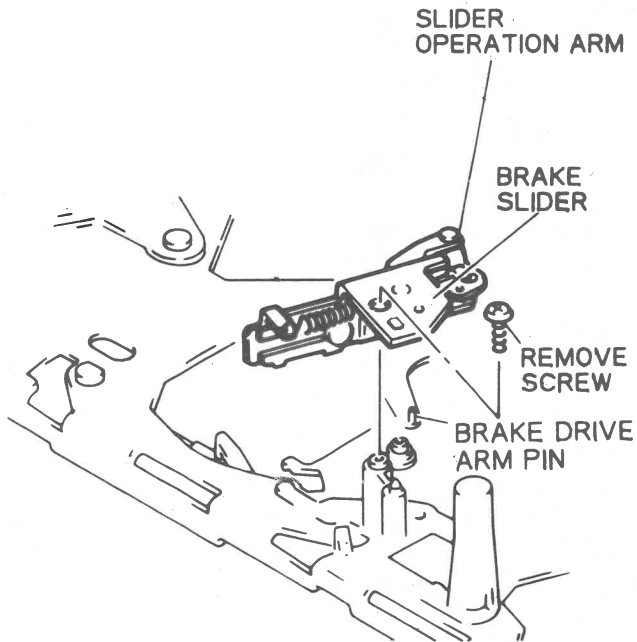


Fig. 30 Brake Slider Removal

**Supply and Take-up Loading Arm Removal (Fig. 31)**

1. Remove the cassette loading mechanism assembly.
2. Remove the tension band and the tension arm.
3. Remove the sub brake.
4. Remove the three (3) screws on the guide base clamp plate to remove the clamp plate and the P2/P3 tape guide assemblies.
5. Remove the supply and take-up loading arms.

**Note:** Upon reinstallation, insure that the tab on the loading gear is properly positioned in the slot of the loading arm.

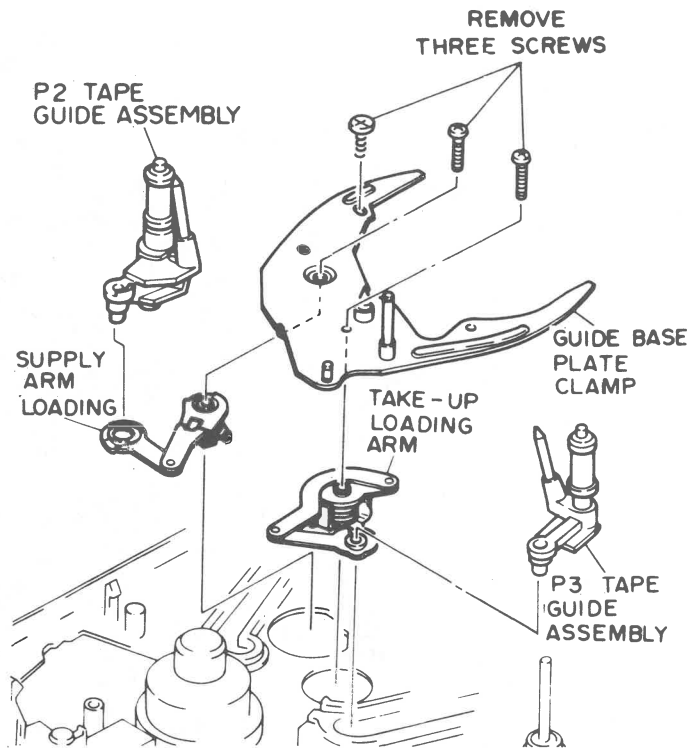


Fig. 31 Supply and Take-up Loading Arms Removal.

**Loading Gear Assembly Removal (Fig. 32)**

1. Remove top cover, bottom cover and front panel.
2. Remove the cassette loading mechanism.

**Note:** Insure that the mechanism is in the full stop position by manually turning the loading pulley in the direction of the arrow until it stops.

3. Remove the reel drive idler.
4. Remove two (2) screws on the guide base clamp plate.
5. Remove the capstan flywheel.
6. Remove the clutch plate and brake slider.
7. Remove the mechanism state sense switch.
8. Remove the switch slider spring. Release the tab securing the switch slider and remove.
9. Release tab securing the tension release arm and remove.
10. Remove the loading belt.
11. Remove three (3) screws holding the loading gear assembly.

**Note:** Upon reinstallation, verify the alignment of the timing marks on the gears and also align the following:

- Mechanism State Switch
- Operation arm shaft pin positioned correctly in the hole of the take-up reel operation arm.
- Pressure roller drive arm pin installed correctly in the hole on the pressure roller operation arm.

MECHANICAL DISASSEMBLY (Continued)

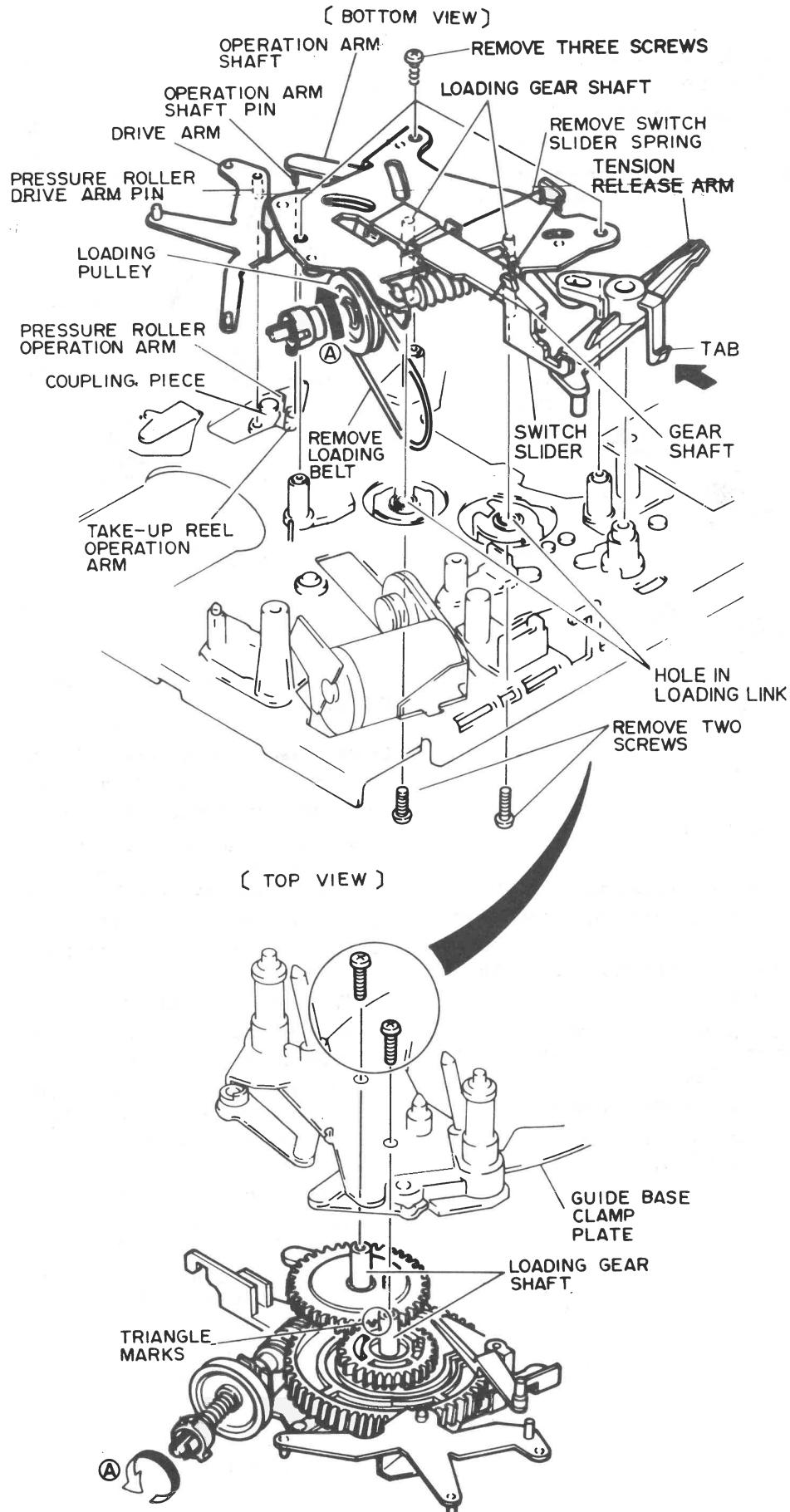


Fig. 32 Loading Gear Assembly Removal

## MECHANICAL DISASSEMBLY (Continued)

**Tape Drawer Pin Removal (Fig. 33)**

1. Remove the cassette loading mechanism assembly.
2. Remove the washer holding the tape drawer pin.

**Note:** When reinstalling the tape drawer pin, use a new retaining washer and check that the spring is hooked to the pin.

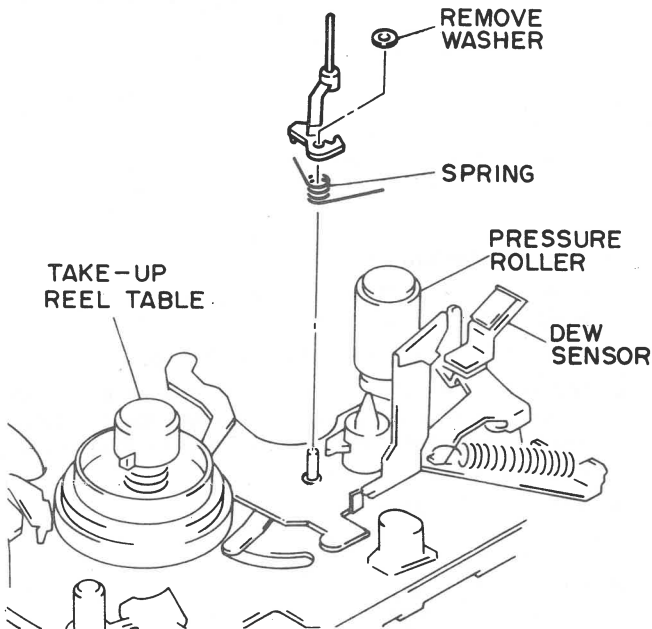


Fig. 33 Tape Drawer Pin Removal

**Arm Bracket Assembly Removal (Fig. 34)**

1. Remove the cassette loading mechanism assembly.
2. Release the wires of the end lamp from the arm bracket assembly.
3. Remove the dew sensor.
4. Remove two (2) screws securing the arm bracket assembly.
5. Remove the take-up reel table.
6. Remove the tape drawer pin.
7. Remove the pressure roller assembly.
8. Pull up to remove the arm bracket assembly.

**Note:** During reinstallation follow the items listed below:

- Use reverse procedure for reassembly.
- When reinstalling the arm bracket assembly, check that the operation arm shaft is inserted into the hole in the take-up reel operation arm.
- Use new washers when reinstalling the take-up reel table, tape drawer pin and pressure roller arm.
- During reinstallation of the arm bracket assembly, make sure to replace the wires of the end lamp in the retainers on the arm bracket assembly.

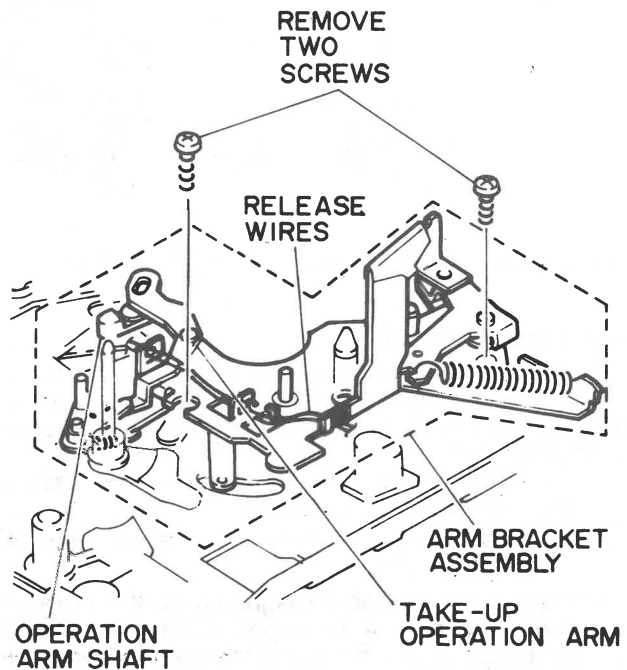


Fig. 34 Arm Bracket Assembly Removal



## MECHANICAL ADJUSTMENTS

### Operating VCR Without a Cassette (Fig. 1)

1. Remove the AC power from VCR (Unplug).
2. Remove the top and bottom covers.
3. Disconnect the connector (PG4) from the cassette loading motor circuit board.
4. Connect a jumper between pins 2 and 5 of PG4.
5. Apply AC power.

**Note:** The above procedure enables the VCR to operate without inserting a cassette tape. To place the VCR in the record mode, press the *Record* button while holding the safety tab switch lever in. After reconnecting PG4, AC power may have to be momentarily removed for proper VCR operation. The cassette basket does not have to be in the down (loaded) position.

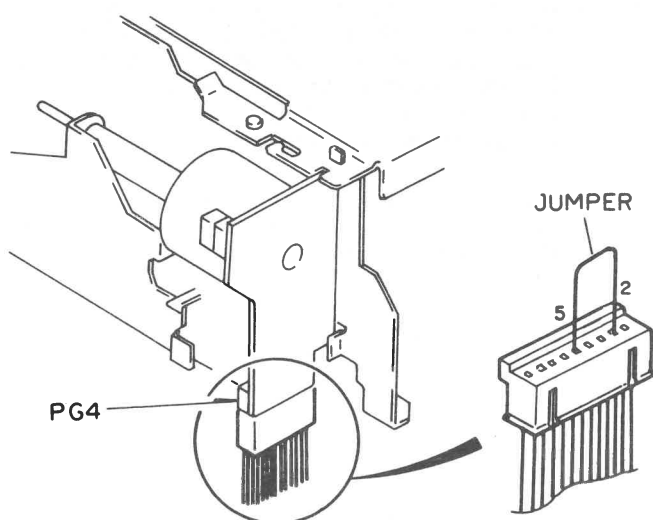


Fig. 1 Operating VCR Without a Cassette Tape

### Reel Table Height (Fig. 2)

The supply and take-up reel tables should be the same height ( $\pm 0.2\text{mm}$ ). The reel table heights are adjusted by changing the washer stack located under each reel table.

1. Follow the procedure for removing the cassette loading mechanism assembly.
2. Insert the Height Reference Plate into the instrument.
3. Place the Reel Table Height Jig on the plate and check the reel table height. Point (A) of the jig should pass over the top of the reel table and point (B) should not.

**Note:** Two sizes of washers are available, 0.25mm (3.2mm ID) and 0.5mm (3.2mm ID). These washers should be used in combination to achieve equal heights for both reel tables. See the Tools and Fixtures section of Parts List for washer stock numbers.

The supply reel table has a nylon washer and a plastic collar. This washer is part of the washer shims used for the adjustment.

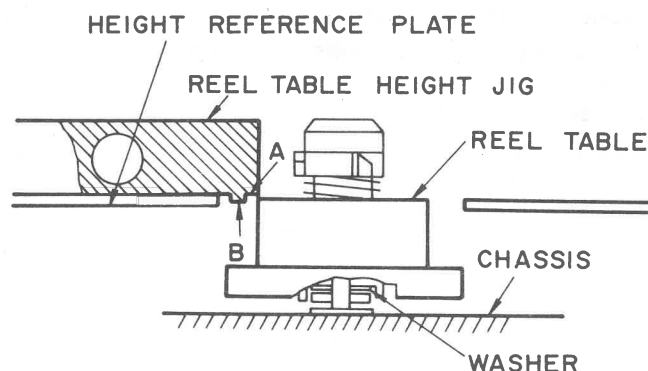


Fig. 2 Reel Table Height

### Tension Arm Position (Fig. 3)

1. Operate the VCR without a cassette (Fig. 1 of Mechanical Adjustments).
2. Place the instrument in the PLAY mode.
3. When the mechanism is loaded, loosen the screw holding the tension arm and adjust so the clearance between the tension arm and the edge of the chassis is 1.0 to 2.0mm.
4. Tighten the screw.

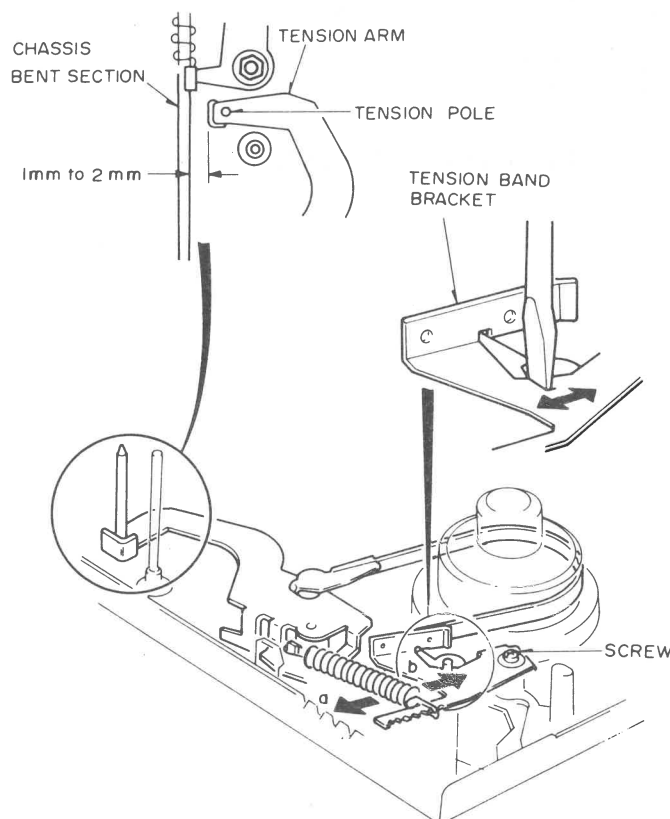


Fig. 3 Tension Arm Position

## MECHANICAL ADJUSTMENTS (Continued)

### Back Tension (Fig. 3, 4)

When the back tension is properly adjusted, the service test tape (recorded under laboratory conditions) will play back with minimum skew error (picture displacement in the line following head switching.)

**Note:** Two (2) Back Tension Cassette Gauges are available. When using the gauge illustrated in Fig. 4 use the values in parenthesis ( ).

The instrument must be in the horizontal position for this adjustment.

1. Place the instrument in the normal operating position.
2. Place the instrument in the PLAY mode with the Back Tension Cassette Gauge installed.
3. The reading should be 32 to 38 (22 to 38).
4. If the reading is 39 or higher, adjust the tension arm spring in direction "a" (Fig. 3) and if the reading is 31 (21) or lower, adjust the tension arm in direction "b". Adjust the back tension for nominal reading of 35 (30).

**Note:** If the back tension is out of tolerance by more than six divisions, reconfirm the tension arm position.

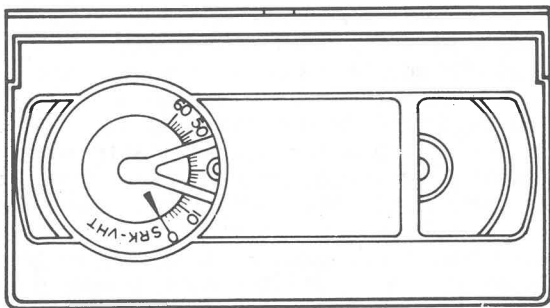


Fig. 4 Back Tension Gauge

### Brake (Main) Torque Confirmation (Fig. 5)

1. Clean the brake surfaces on the reel table using a "KimWipe" (or equivalent) and solvent. Do not allow solvent to wet the brake pads.

**Note:** Make certain the reel drive idler is centered between the take-up and supply turntables.

2. Attach the Adapter to the Torque Gauge and place the gauge on the supply reel table.
3. Turn the Torque Gauge clockwise until the brake begins slipping. The torque reading should be more than 170 grams/cm.
4. Place the Torque Gauge on the take-up reel table and turn the gauge counterclockwise. The torque reading should be more than 170 grams/cm.

**Note:** Brake torque problems can cause tape stretch, broken tape, loose tape in cassette, or tape spillage. These symptoms can usually be corrected by proper cleaning. If the symptoms remain after cleaning, replace the main brakes.

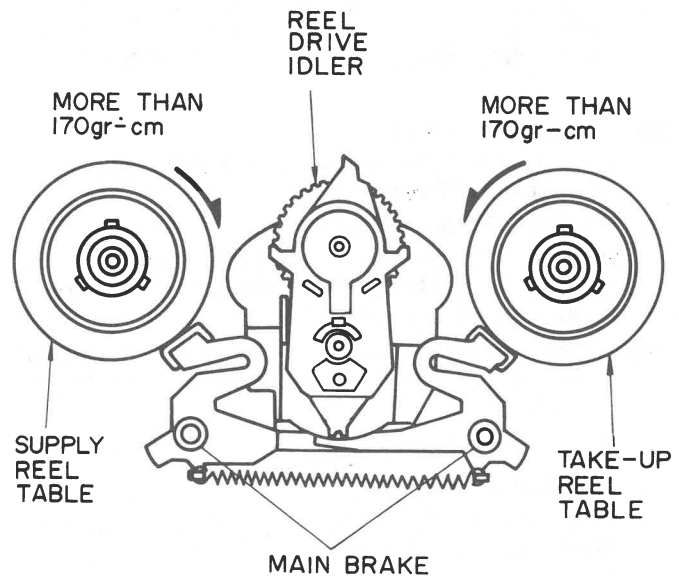


Fig. 5 Main Brake Torque Confirmation

### Play/Fast Forward/Rewind Torque Confirmation

1. Operate the VCR without a cassette (Fig. 1 of Mechanical Adjustments).
2. Attach the Adapter to the Torque Gauge and place the gauge on the take-up reel.
3. Set the speed select switch to SP.
4. While pressing the record safety tab switch toward the front of the instrument, place the instrument in the record mode. The torque reading should be 90-230 grams/cm.

**Note:** The torque reading should be taken quickly. The take-up reel sensor will return the instrument to the stop mode because the take-up reel table is not rotating.

5. With the Torque Gauge on the take-up reel, place the instrument in the fast forward mode. The torque reading should be 400 grams/cm. minimum.
6. Place the Torque Gauge on the supply reel and operate the instrument in the rewind mode. The torque reading should be 400 grams/cm. minimum.

## MECHANICAL ADJUSTMENTS (Continued)

### Tape Slack Removal Torque Confirmation

1. Operate the VCR without a cassette (Fig. 1 of Mechanical Adjustments).
2. Place the Torque Gauge on the supply reel and place the instrument in the PLAY mode.
3. Press the *Stop* button and observe the torque reading during the unloading operation. The torque reading should measure 90-230 grams/cm.

### Supply Reel Back Torque

1. Operate the VCR without a cassette (Fig. 1 of Mechanical Adjustments).
2. Place the Torque Gauge on the supply reel.
3. Press the *Fast Forward* button and rotate the Torque Gauge clockwise. The torque reading should measure 4-15 grams/cm.

**Note:** The reading is too low to read directly. If operating normally, the indicator will deflect only a slight amount.

### Take Up Reel Back Torque

1. Operate the VCR without a cassette (Fig. 1 of Mechanical Adjustments).
2. Place the Torque Gauge on the take-up reel.
3. Press the *Rewind* button and rotate the Torque Gauge counterclockwise. The torque reading should measure 4-15 grams/cm.

**Note:** The reading is too low to read directly. If operating normally, the indicator is deflected only a slight amount.

### Mechanism State Switch (Fig. 6)

1. Turn the loading motor pulley in the counterclockwise direction until the instrument is completely in the unload position.
2. Loosen the screw and move the switch until the V-shaped groove and the triangle are in perfect alignment.
3. Confirm loading and unloading and also operate the instrument in the record pause mode.

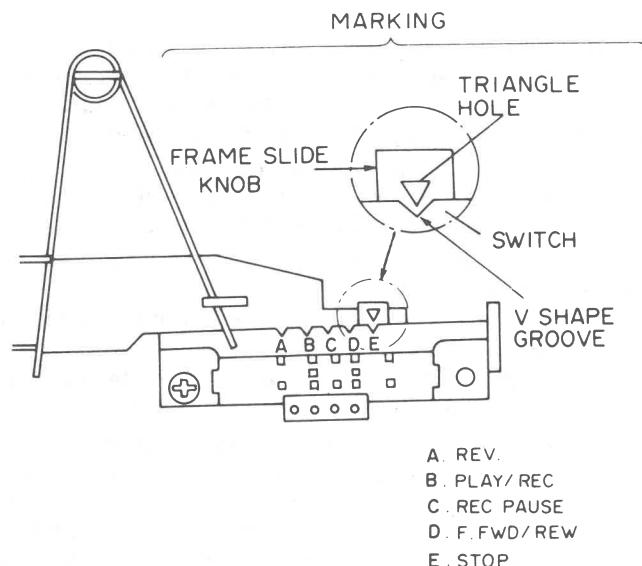


Fig. 6 Mechanism State Switch

### Mechanical Interchangeability Considerations

The tape-guide adjustments position the tape so that the prerecorded tracks on the test tape align perfectly with the scan of the video head assembly. The Interchangeability adjustment procedures will insure that a tape recorded on one VHS recorder will play back properly on another VHS recorder. Usually, little or no mechanical adjustment is required after routine (head replacement) servicing. Before making any adjustments, perform the following Interchangeability Confirmation procedure to determine if adjustment is required. If the video heads are replaced, it will be necessary to confirm the PG Shifter Adjustment. If major mechanical servicing was performed (tape guide replacement, etc.) complete the Rough Tape Travel Confirmation before using the test tape.

## MECHANICAL ADJUSTMENTS (Continued)

## Interchangeability Confirmation (Fig. 7)

**Note:** This confirmation check should be performed after any servicing operation that could adversely affect the tape; i.e. D-D motor replacement, tape guide replacement, Audio/Control head replacement, etc. If the unit passes this check, no tape guide adjustment is needed. This adjustment should also be performed after the Tracking Preset adjustment is completed. (See Electrical Adjustments)

1. Connect channel-1 scope probe (2V/div.; 5msec/div.) to TP503. Trigger the scope on channel 1.
2. Connect channel-2 scope probe (100mV/div.) to TP201 (Main CBA; PB FM Level).
3. Insert monoscope test tape and play back. Adjust the *Tracking* control (RV751) for maximum FM envelope amplitude at center of envelope (TP201).
4. Adjust the vertical gain on the scope so the maximum envelope amplitude is 4 graticule divisions.
5. Turn the *Tracking* control (RV751) to the left until the maximum envelope amplitude is 3 graticule divisions.
6. Confirm that the minimum envelope amplitude is 1.6 graticule divisions or more.
7. Turn the *Tracking* control (RV751) to the right until the maximum envelope amplitude is 3 graticule divisions.
8. Confirm that the minimum envelope amplitude is 1.6 graticule divisions or more.
9. When the confirmation items described above are satisfied, the tape guide adjustment is not necessary.
10. Set the *Tracking* control (RV751) to the detent position. Adjust the Audio/Control head assembly horizontal position-X value (Fig. 9) to obtain the maximum FM envelope (channel-2 scope waveform-TP201).

**Note:** If the D-D cylinder motor assembly has been replaced, perform the following electrical adjustments.

● PG Shifter Adjustment.

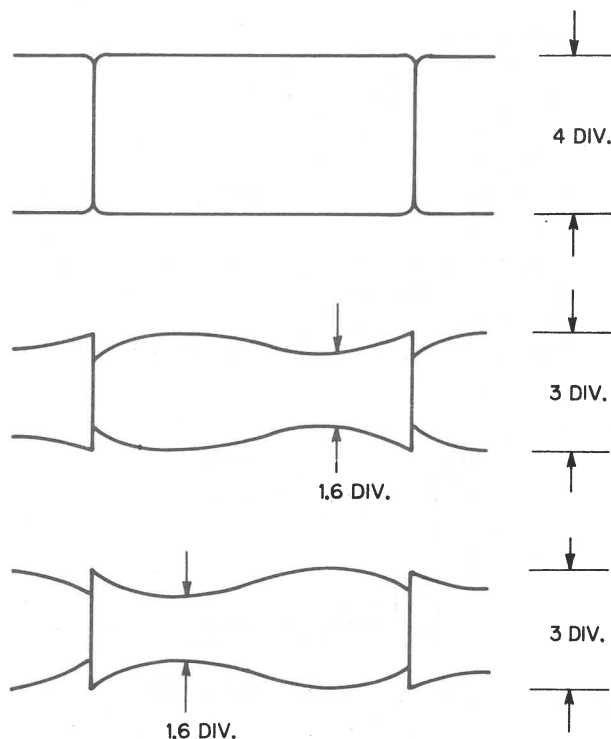


Fig. 7 Head Amp Envelope

## Rough Tape Travel Confirmation

Using a blank tape, place the instrument in the play mode and note the following:

1. The tape should be in full contact with all tape guide posts.
2. The tape should be crease-free with no slack.
3. The impedance rollers should be moving freely.
4. The tape should be perpendicular to the longitudinal axis of the heads when crossing the erase head and the A/C head.
5. The tape should be centered top to bottom on the head when crossing the full erase head.
6. The tape should follow the lower edge guide surfaces on the D-D cylinder.

## Creasing or Slack Tape

Load instrument with a blank tape and place the instrument in the play mode. With the tape running, inspect the tape path for creasing or frilling along top or bottom edges of tape. If the tape is creasing or frilling, check the tape as it makes contact with the D-D cylinder. The tape should follow the lower edge guide surface on the cylinder. If the tape is high on the guide surface, rough adjust P2 and P3 tape guides. It will now be necessary to perform P2 and P3 Tape Guide Adjustment and confirm interchangeability.

## MECHANICAL ADJUSTMENTS (Continued)

### P1/P4 Tape Guide Post Height (Fig. 8)

1. Remove the cassette loading mechanism assembly (Fig. 11 of Mechanical Disassembly).
2. Install the Height Reference Plate into the instrument.
3. Place the Reel Table Height Gauge on the Height Reference Plate.
4. Adjust the nut on top of the P1 and P4 guide posts for a clearance of  $0.1 \pm 0.1\text{mm}$ .
5. The P2 and P3 guide posts may be rough adjusted in a similar manner, using the hex screwdriver.

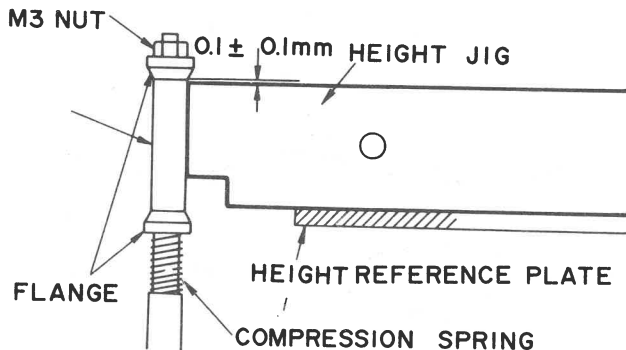


Fig. 8 Tape Guide Post Height

### P2 and P3 Tape Guide Adjustment

1. Connect channel-1 scope probe (2V/div.; 5msec/div.) to TP503. Trigger the scope on channel-1.
2. Connect channel-2 scope probe (100mV/div.) to TP201 (Main CB; PB FM Level).
3. Set the *Tracking* control (RV751) to the detent position and play back the monoscope signal test tape.
4. Loosen the hex screw on the base of the P2 and P3 guide posts.
5. Adjust the guide posts (P2, P3) clockwise (down), using the hex screwdriver, until the bottom edge of the tape bows slightly away from the cylinder guide.
6. Adjust the P3 guide post counterclockwise (up), to obtain the maximum amplitude on the right side of the RF envelope at TP201.
7. Adjust the P2 guide post counterclockwise, to obtain maximum amplitude on the left side of the RF envelope at TP201.
8. Readjust the *Tracking* control (RV751) for maximum envelope.
9. Touch up the tape guides (P2 and P3) for a flat, maximum amplitude envelope.
10. Tighten the hex screws at the base of P2 and P3 guide posts.
11. Adjust the A/C control head horizontal (X-Value) position (Fig. 9), if necessary, so the flattest envelope condition occurs at the *Tracking* control (RV751) detent position.

**Note:** In the event the correct head envelope is not obtainable, check the A/C head adjustments.

### Audio/Control (A/C) Head Height/Tilt/Azimuth (Fig. 9)

1. Connect channel-1 scope probe (0.2V/div.; 1msec/div.) to the *Audio Out* jack on the rear of the instrument.
2. Play back the 1kHz audio signal on the alignment tape.
3. Alternately adjust the height nut (A) and tilt screw (C) for maximum output.
4. Play back the 7kHz audio signal on the alignment tape.
5. Adjust the azimuth screw (B) for maximum output.
6. Repeat steps 3 and 5 for maximum 1kHz and 7kHz output.
7. Lock the A/C head nut (A) with paint.

### Audio/Control (A/C) Horizontal Position (Fig. 9)

This adjustment establishes proper tape tracking when the *Tracking* control (RV751) is in the detent position.

**Note:** This adjustment should only be made after the *Tracking* adjustment is completed. See the Electrical Adjustment section.

1. Connect channel-1 scope probe (100mV/div.; 5msec/div.) to TP201 (Main CB; PB FM Level).
2. Set the *Tracking* control (RV751) to the detent position.
3. Play back the monoscope signal on the alignment tape.
4. Adjust the X-value screw in either direction for maximum head envelope.

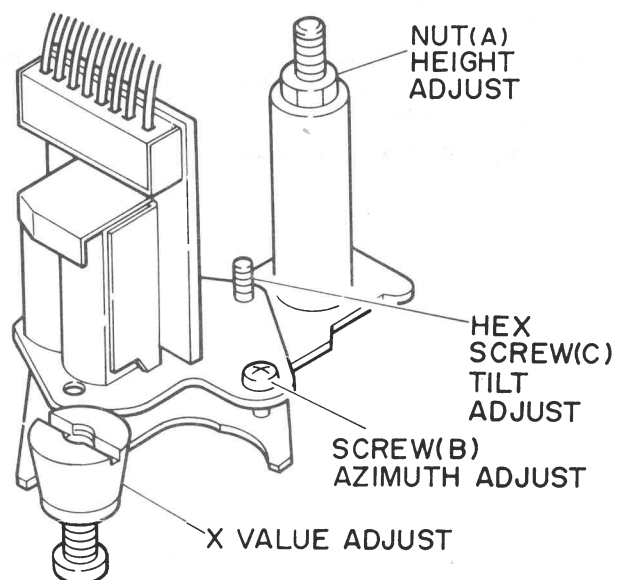


Fig. 9 Audio/Control Head

## ELECTRICAL ADJUSTMENTS

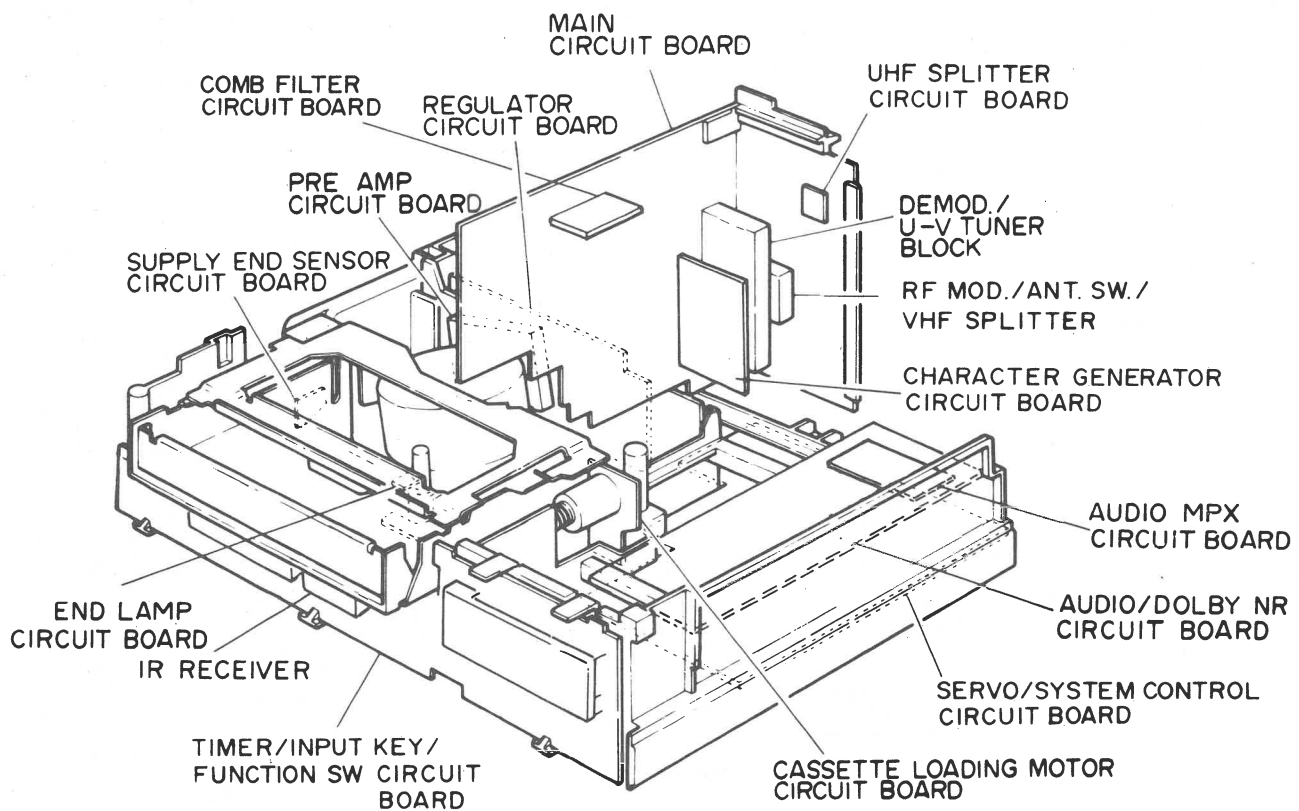


Fig. 1B Service Position/Circuit Board Locations (Top View)

**Note:** The procedure for placing the instrument in the service position is described in the "Instrument Disassembly" section.

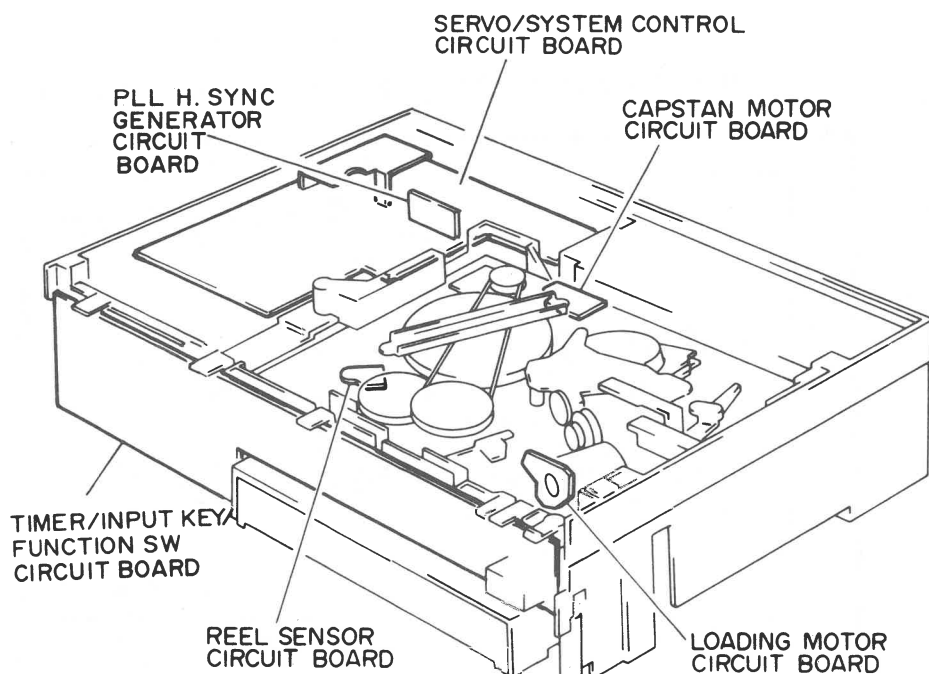


Fig. 2 Circuit Board Locations (Bottom View)

# ELECTRICAL ADJUSTMENTS (Continued)

1-E3

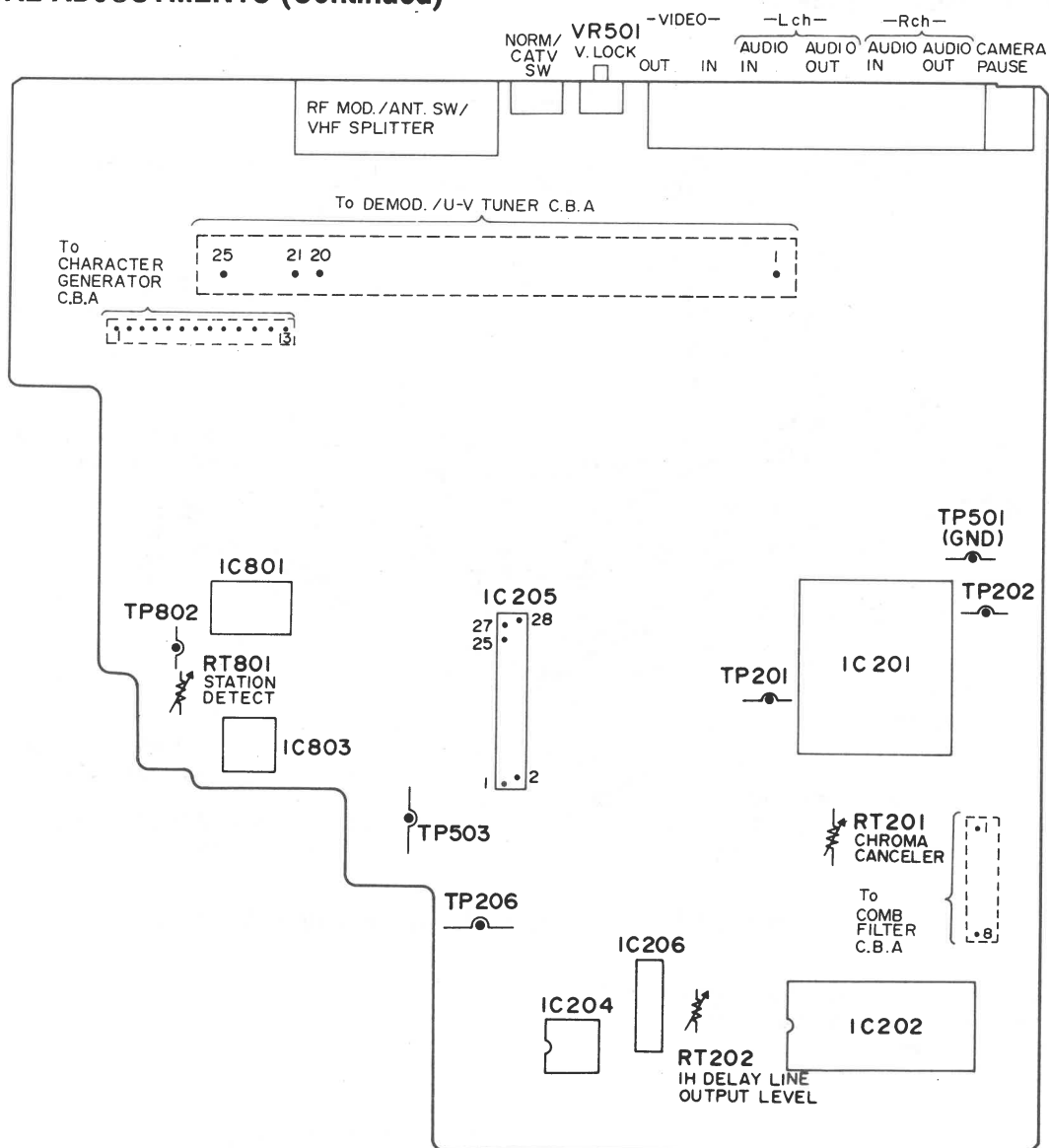


Fig. 3 Main Board Test Point/Control Locations (Copper Side)

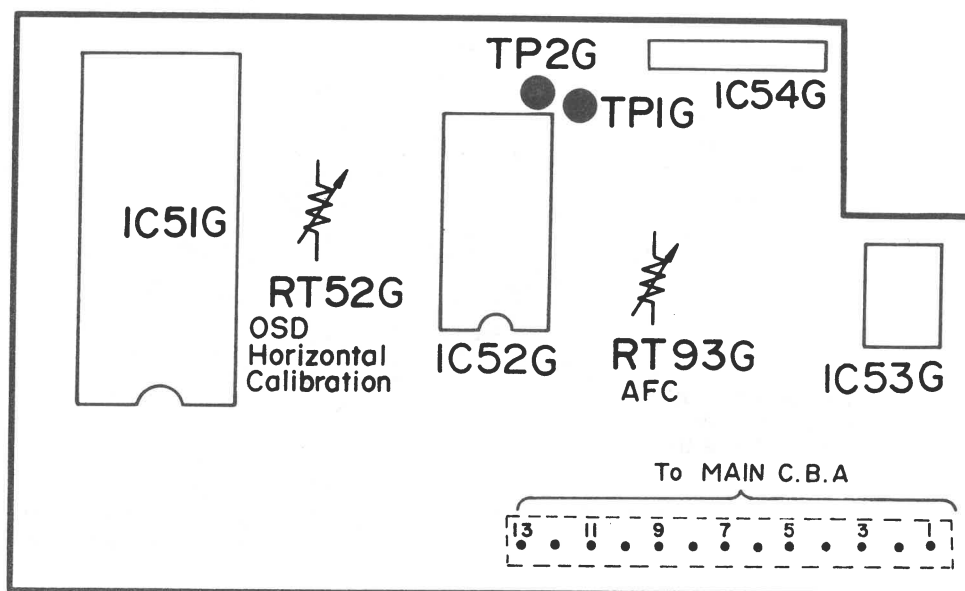


Fig. 4 Character Generator Test Point/Control Location (Component Side)

## ELECTRICAL ADJUSTMENTS (Continued)

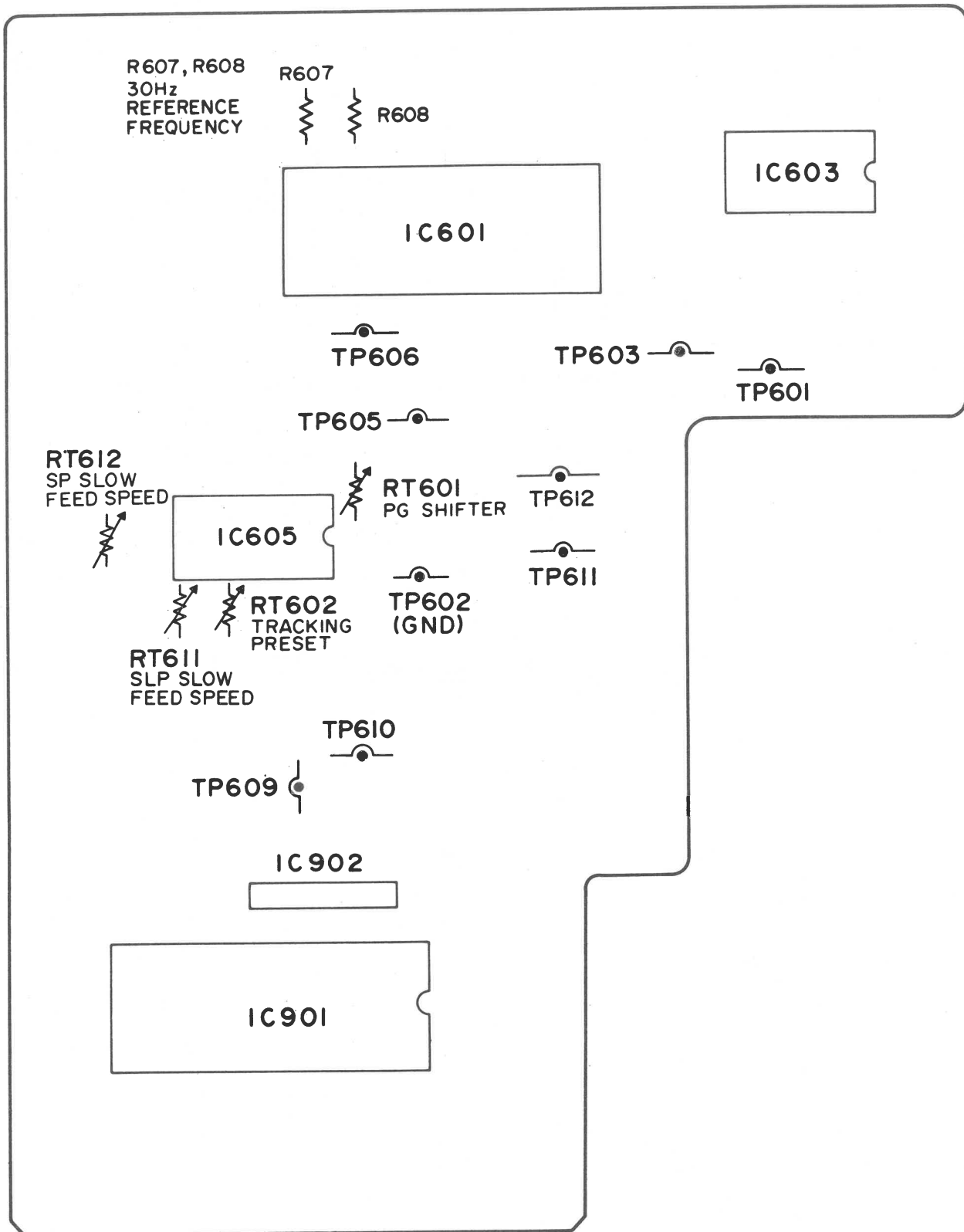


Fig. 5 Servo/System Control Test Point/Control Locations (Component Side)



## ELECTRICAL ADJUSTMENTS (Continued)

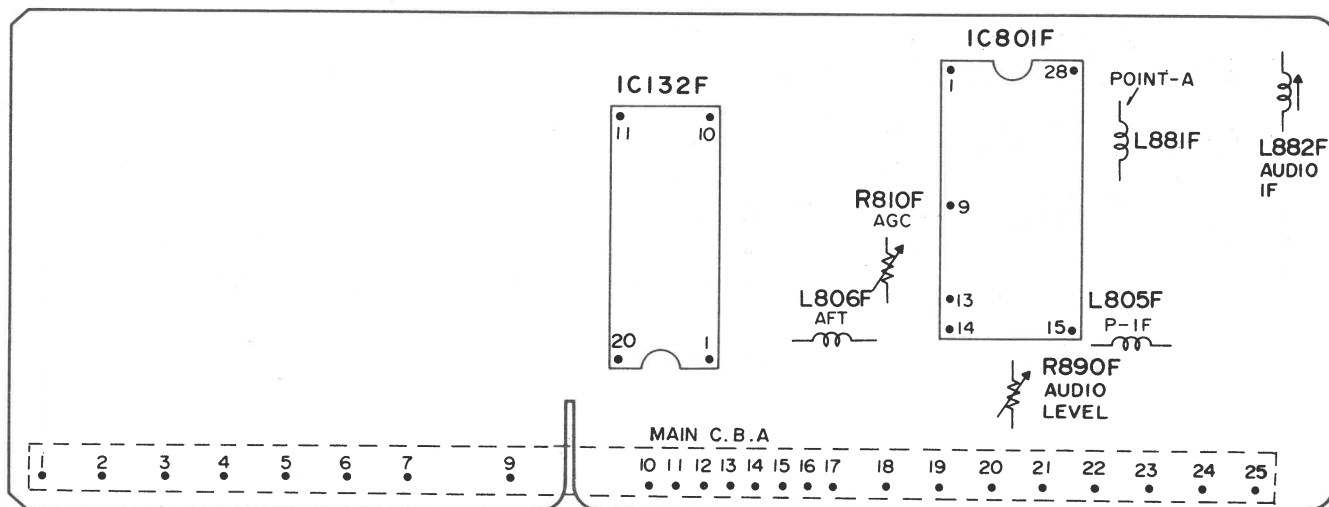


Fig. 6 Demodulator/U-V Tuner Test Point/Control Location (Component Side)

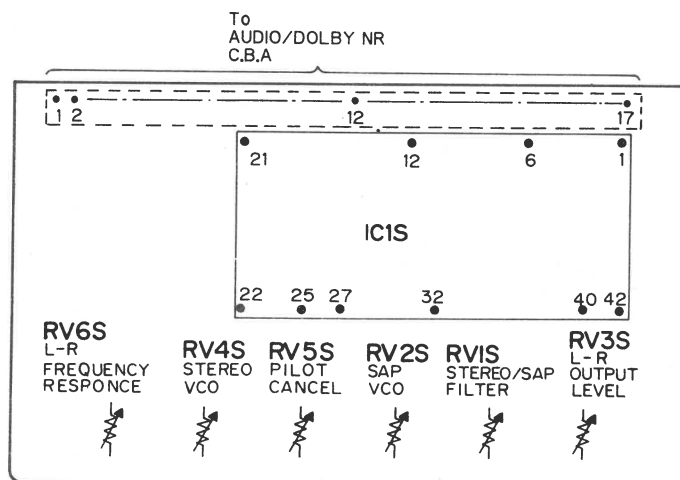


Fig. 7 Audio MPX Test Point/Control Locations (Component Side)

**Electronic Test Equipment Requirements:**

1. Dual-Trace Triggered Oscilloscope with Lo-Cap (X10) and Direct Probes.  
Response: DC-20MHz  
Sensitivity: 5mV/div.  
Max. Sweep Rate: 0.1μsec./div.
2. Frequency Counter-7 digits  
Sensitivity: 25mV-5V  
Range: 50Hz-100MHz
3. DVM  
Range: 0.1VDC-1000VDC  
Accuracy: 0.5%
4. NTSC Video Signal Generator-Must provide 1V p-p negative sync video across a 75 ohm load and produce standard NTSC 75% saturated color bars with a 100% white window.
5. DC Power Supply Range: 0-50V, 2A well filtered.
6. Temperature Controlled Soldering Station-Grounded tip.  
(Tip temperature: 500°-600°F)

**Note:** 500 deg F Maximum for leadless components.

7. AC Variac-Continuously variable.

**30Hz Reference Frequency**

Test Point:	Audio Out Jack	Rear Panel
-------------	----------------	------------

This reference frequency is used to correct for fluctuations caused by mechanical tolerance differences between the belt, pulley, capstan motor and capstan shaft.

1. Connect a frequency counter to the Audio output jack.
2. Connect a jumper between TP601 and TP603 on the main circuit board.
3. Set the SP/LP/SLP switch to SP.
4. Load the instrument with an alignment tape and playback the 3kHz audio signal.
5. Confirm that the frequency reading on the counter is 3000Hz±15Hz.
6. If the reading is higher than 3015Hz, remove R608. Check for the presence of R607 (4700 ohm). If not present, add R607.
7. If the reading is lower than 2985Hz, remove R607. Check for the presence of R608 (3900 ohm). If not present, add R608.
8. Remove the jumper.

## ELECTRICAL ADJUSTMENTS (Continued)

## PG (Pulse Generator) Shifter (Fig. 8)

Test Points:	TP503	Servo/ Syscon
Adjust:	Video Out Jack RT601 (PG Shifter)	Rear Panel Servo/ Syscon

The Pulse Generator (PG) Shifter determines the video head switching point during playback. Misadjustment of the PG Shifter may cause head switching noise in the picture and/or vertical jitter.

1. Load the instrument with an alignment tape and playback the color bar signal or monoscope signal.
2. Connect channel-1 scope probe (1V/div.; 50 $\mu$ sec/div.) to TP503. Trigger the scope on channel-1.
3. Connect channel-2 scope probe (1V/div.) to the Video Out jack.
4. Set the scope to (-) slope and adjust the *PG Shifter* control RT601 so that the trailing edge of the SW 30Hz pulse is placed  $6.5H \pm 0.5H$  (horizontal) lines before the start of vertical sync pulse.

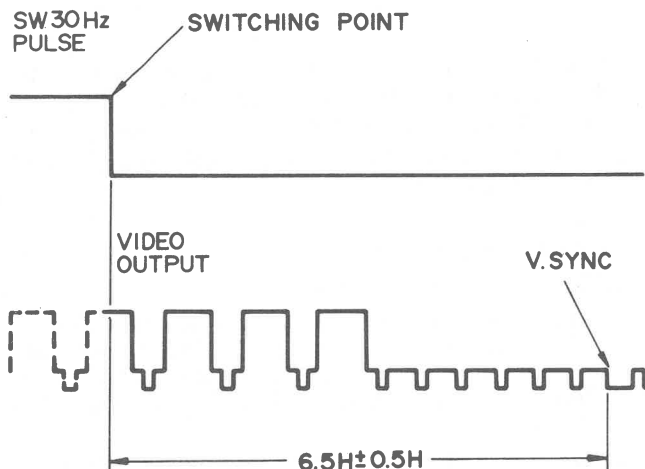


Fig. 8 PG Shifter

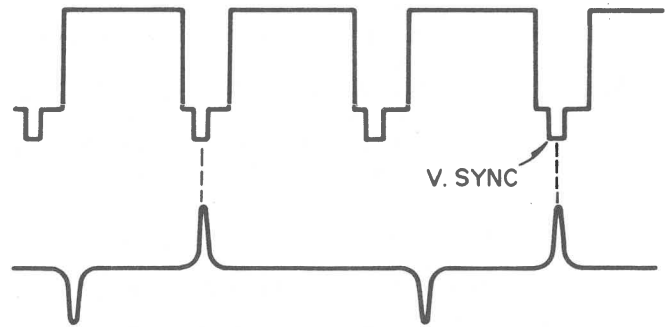
## Tracking Preset (Fig. 9)

Test Points:	TP605 (CTL Pulse)	Servo/ Syscon
Adjust:	Video Out Jack RT602 (Tracking Preset)	Rear Panel Servo/ Syscon

This adjustment sets the tracking during playback of a tape recorded on this instrument, so that when the Tracking control is in the detent position, playback performance is optimized. The adjustment is performed with the Tracking control in the "detent" position.

1. Apply an NTSC color bar signal to the Video Input jack on the rear panel and place the *Tuner/Line/Simulcast* switch in the line position.
2. Connect channel-1 scope probe (2V/div.; 5msec/div.) to TP605. Trigger the scope on channel-1 (+ slope).

3. Connect channel-2 scope probe (1V/div.) to the Video Output jack.
4. Set the *Tracking* control on the front panel to the detent position.
5. Using a blank tape, make an SP recording with the instrument in the normal operating position and play back.
6. Adjust the *Tracking Preset* control (RT602) to align the positive peak of the CTL pulse with the vertical sync pulse of the video output signal (Fig. 9).



## CTL PULSE

Fig. 9 Tracking Preset

## Slow Feed Speed

Observe:	Monitor	
Adjust:	RT611 (SLP Slow Feed Speed)	Servo/ Syscon
	RT612 (SP Slow Feed Speed)	Servo/ Syscon

1. Unplug the AC power cord of the VCR from the AC outlet for at least 5 seconds to set the slow tracking control to the center position.
2. Apply an NTSC color bar signal to the video input jack on the rear panel.
3. Set the *TV/VCR* select switch to VCR and the *Tuner/Line Simulcast* switch to the LINE position.
4. Using a blank tape, make an SLP recording and playback.
5. Operate the remote control to set the VCR to the slow play mode.
6. Adjust the *SLP Slow Feed Speed* control (RT611) to eliminate the noise in the picture.
7. Operate the remote control to set the VCR to the pause mode. If excessive noise appears, repeat steps 5 and 6.
8. Using a blank tape, make an SP recording and playback.
9. Operate the remote control to set the VCR to the slow play mode.
10. Adjust the *SP Slow Feed Speed* control (RT612) to place the noise band at the bottom of the screen.

## ELECTRICAL ADJUSTMENTS (Continued)

### Comb Filter Adjustment

1. Receive a TV program and record it and play it back using the same VCR.
2. Observing the TV monitor, adjust the *Comb Filter* controls (RT50CF: 1H Delay Chroma Level, LT50CF: Delay Line Trim) so the color density and tint are normal.

### Audio Playback Gain Adjustments

Test Point:	Rch Audio Output Jack	Rear Panel
	Lch Audio Output Jack	Rear Panel
Adjust:	RT401R (Rch Audio PB Gain)	Audio/Dolby NR
	RT401L (Lch Audio PB Gain)	Audio/Dolby NR

This adjustment sets the output level of the audio signal to the specified level.

1. Set the Dolby NR switch to OFF position.
2. Load the instrument with an alignment tape and playback the 1kHz audio signal (Tape Stock No. 156503).

### Lch Audio Playback Gain

3. Connect a millivoltmeter (or scope) to the Lch audio output jack.
4. Adjust the L-ch Audio Playback Gain Control (RT401L) for  $90 \pm 5\text{mVrms}$  ( $255 \pm 15\text{mVp-p}$  on scope).

### Rch Audio Playback Gain

5. Connect the millivoltmeter (or scope) to the Rch audio output jack.
6. Adjust the R-ch Audio Playback Gain Control (RT401R) for  $90 \pm 5\text{mVrms}$  ( $255 \pm 15\text{mVp-p}$  on scope).

### Audio Bias Level Adjustments

Test Points:	TP401R (Rec Bias)	Audio/Dolby NR
	TP401L (Rec Bias)	Audio/Dolby NR
	TP402R (Bias Ground)	Audio/Dolby NR
	TP402L (Bias Ground)	Audio/Dolby NR
Adjust:	RT403R (Rch Audio Bias Level)	Audio/Dolby NR
	RT403L (Lch Audio Bias Level)	Audio/Dolby NR

Optimum audio record bias is regulated by this adjustment. If the level is too low, high frequencies are increased, resulting in distortion. If the level is too high, frequencies are attenuated.

1. Load the instrument with a blank tape and place in the SP record mode with no signal.

### Lch Audio Bias Level

2. Connect a millivoltmeter (or scope) between TP401L and TP402L (Bias Ground).
3. Adjust the Lch Audio Bias Level Control (RT403L) for  $2.6\text{mV} \pm 0.1\text{mVrms}$  ( $7.4\text{mV} \pm 0.3\text{mVp-p}$  on scope).

### Rch Audio Bias Level

4. Connect the millivoltmeter (or scope) between TP401R and TP402R (Bias Ground).
5. Adjust the Rch Audio Bias Level Control (RT403R) for  $2.6\text{mV} \pm 0.1\text{mVrms}$  ( $7.4\text{mV} \pm 0.3\text{mVp-p}$  on scope).

### Audio Record Level Adjustments

Test Point:	TP431R (Rch Rec Output)	Audio/Dolby NR
	TP431L (Lch Rec Output)	Audio/Dolby NR
Adjust:	RT402R (Rch Audio Rec Level)	Audio/Dolby NR
	RT402L (Lch Audio Rec Level)	Audio/Dolby NR

This adjustment optimize the record level of the audio signal with VCR in simulcast mode.

1. Set the Dolby NR switch to OFF position.
2. Set the LINE/TUNER/SIMULCAST select switch to LINE position.

### Lch Audio Record Level

3. Connect a DVM to TP431L.
4. Apply an oscillator output (400 Hz,  $245 \pm 18\text{mVrms}$ ) to the Lch audio input jack, and preadjust the audio record level control RT402L so the audio record level at TP431L becomes  $95 \pm 2\text{mVrms}$ .
5. Connect a DVM to the Lch audio output jack.
6. Using a blank tape, make a SP recording and playback. Check that the reading (called "P") on the DVM is  $245 \pm 18\text{mVrms}$ . If "P" is not within  $245 \pm 18\text{mVrms}$ , follow the adjustment procedures 7 and 8.
7. Connect a VDM to TP431L.
8. Adjust RT402L so the audio record level (called "R") at TP431L becomes R'.  

$$R' = R(1 + ((245 - P)/245))$$
P: Audio PB level at Lch audio output  
R: Audio record level at TP431L
9. Connect a DVM to Lch audio output jack.
10. Playback and check that the reading "P" on the DVM is  $245 \pm 18\text{mVrms}$ . If "P" is not within  $245 \pm 18\text{mVrms}$ , repeat adjustment procedures 5, 6, 7 and 8.

### Rch Audio Record Level

11. Connect a DVM to TP431R.
12. Apply an oscillator output (400Hz,  $245 \pm 18\text{mVrms}$ ) to the Rch audio input jack, and preadjust the audio record level control RT402R so the audio record level at TP431R becomes  $95 \pm 2\text{mVrms}$ .

**ELECTRICAL ADJUSTMENTS (Continued)**

13. Connect a DVM to the Rch audio output jack.
14. Using a blank tape, make a SP recording tape and playback, and check that the reading (called "P") on the DVM is  $245 \pm 18\text{mVrms}$ . If "P" is not within  $245 \pm 18\text{mVrms}$ , follow the adjustment procedures 15 and 16.
15. Connect a DVM to TP431R.
16. Adjust RT402R so the audio record level (called "R") at TP431R becomes R'  

$$R' = R(1 + ((245 - P)/245))$$
 P: Audio PB level at Rch audio output  
 R: Audio record level at TP403R
17. Connect a DVM to Rch audio output jack.
18. Playback and check that the reading "P" on the DVM is  $245 \pm 18\text{mVrms}$ , repeat adjustment procedures 13, 14, 15 and 16.

**Chroma Filter Adjustment**

Observe:	Monitor
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1. Record a local color TV program.
2. While viewing the monitor, adjust the *Comb Filter* controls (RT50CF and LT50CF) so the color and tint are normal.

**Chroma Canceled (Fig. 10)**

Test Point:	TP202 (Record Current)	Main
Adjust:	RT201 (Chroma Canceled)	Main

This adjustment cancels the chroma signal components from the luminance signal. When misadjusted, the signal to noise (S/N) ratio deteriorates.

1. Supply an NTSC color bar signal (adjust the input signal level for 1Vp-p) to the video input on the rear panel.
2. Connect channel-1 scope probe (100mV/div.; 10 $\mu$ sec./div.) to TP202.
3. Set the TV/VCR switch to the VCR position and the Tuner/Line switch to the LINE position.
4. Adjust the *Chroma Canceled* control (RT201) to minimize the chroma components in the video signal.

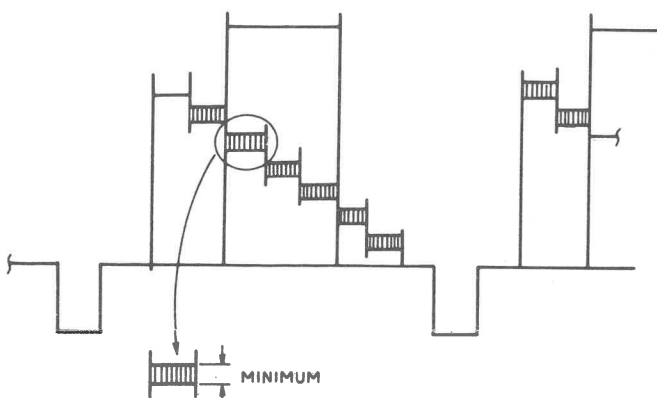


Fig. 10 Chroma Canceled

**1H Delay Line Output Level Adjustment (Fig. 11)**

Test Point:	IC205-25 (Luma)	Main
	TP206 (Delay Luma)	Main
Adjust:	RT202 (1H Delay Level)	Main

This adjustment sets the output level of the CCD Delay line to the same level as the input. When misadjusted, switching noise will occur during dropout compensation.

1. Load the instrument with an alignment tape and playback the color bar signal.
2. Connect channel-1 scope probe (0.1V/div.; 10 $\mu$ sec/div.) to IC205-25.
3. Connect channel-2 scope probe (0.1V/div.) to TP206.
4. Adjust the *1H Delay Line Output Level* control (RT202) so that the video level at pin 25 of IC201 is equal to the level at TP206.

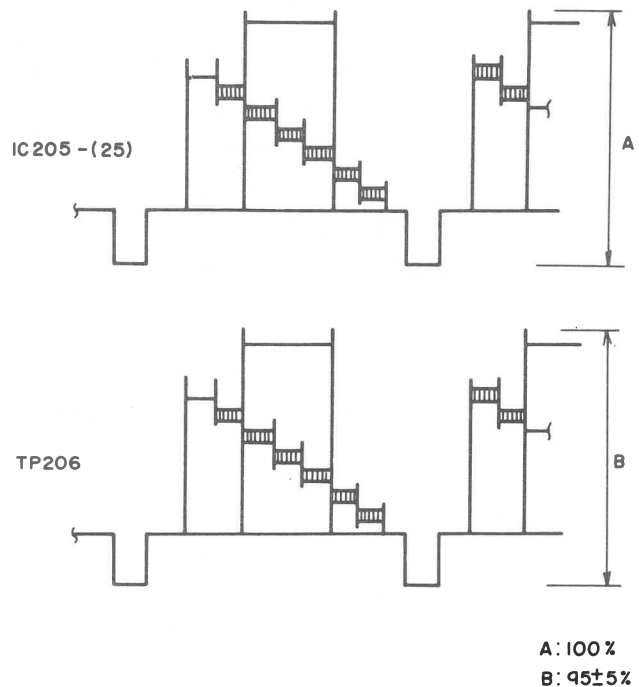


Fig. 11 1H Delay Line Output Level Adjustment

**Station Detect**

This adjustment sets the level used during auto programming to determine if a channel is active. Misadjustment will result in faulty auto programming operation.

Test Point:	TP802 (fH VCO)	Main
Adjust:	RT801 (Station Detect)	Main

**Note:** Check that there is no equipment connected to the RF or video input before performing this adjustment.

**ELECTRICAL ADJUSTMENTS (Continued)**

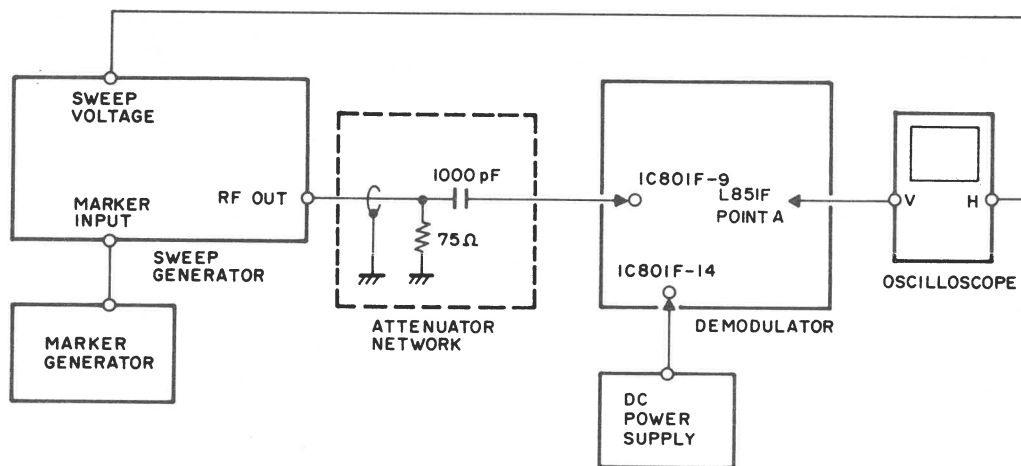
1. Set the *Tuner/Line* switch to TUNER.
2. Connect a frequency counter between TP802 and TP501 (gnd.)
3. Adjust the *Station Detect* control (RT801) for  $15.7\text{kHz} \pm 0.1\text{kHz}$ .

**Picture I-F (Fig. 12)**

Test Point:	IC801F-19	Demodulator
Adjust:	L805F (PIF)	Demodulator

1. Set the *TV/VCR* switch to the VCR position and the *Tuner/Line* switch to the TUNER position.

2. Connect a DC bias supply of 4.0-5.0V to IC801F-pin 5.
3. Connect channel-1 scope probe to IC801F-19.
4. Connect a sweep generator/marker generator and an attenuator network as shown in Fig. 12. Adjust the sweep generator for  $-15\text{dBm}$  sweep signal.
5. Set the AGC control (R810F) to the mechanical center.
6. Adjust the DC bias supply so that the waveform on the scope is 1Vp-p.
7. Turn on the 45.75MHz marker.
8. Adjust the *Picture IF* control (L805F) for maximum detection of the 45.75MHz marker.

*Fig. 12 Set-up for Picture-IF Adjustment*

## ELECTRICAL ADJUSTMENTS (Continued)

## TEST EQUIPMENT REQUIRED

The following equipment is required for adjustment of VPT395.

1. MTS Sound Signal Generator (B&K 2009)
2. Frequency Counter  
Sensitivity: 25mV-5V  
Range: DC-50Hz-20MHz
3. Millivoltmeter (or DVM)  
Range: 0.1mVDC-400VDC  
1mVAC-400VAC
4. Oscilloscope  
Frequency: DC-20MHz  
Sensitivity: 1mV-5V/div. (Vertical)
5. Audio Signal Oscillator

## AFT Adjustment (Fig. 13)

Test Point:	Demod-20 (AFT)	Main
Adjust:	L806F (AFT)	Demodulator

1. Set the *TV/VCR* switch to the VCR position and the *Tuner/Line* switch to the TUNER position.
2. Connect a DC bias supply of 5.0-6.0V to IC801F-pin 14.
3. Connect the scope probe to Demod-20.
4. Connect a sweep generator/marker generator and an attenuator network as shown in Fig. 12. Adjust the sweep generator for a  $-15\text{dBm} \pm 10\text{dBm}$  sweep signal.
5. Turn on the 45.75MHz marker.
6. Adjust the *AFT* control (L806F) as shown in Fig. 13.

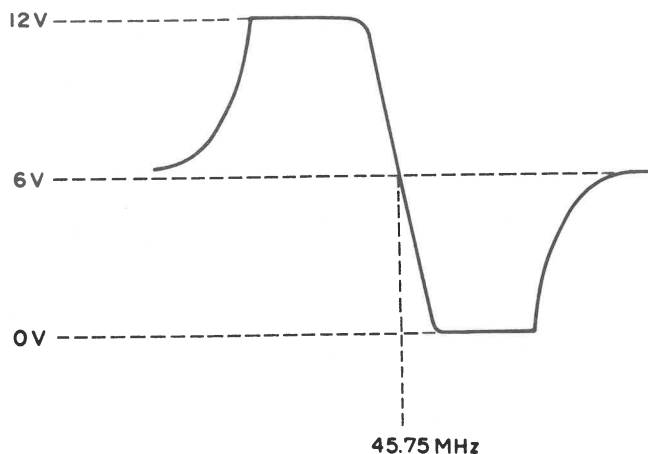


Fig. 13 AFT Adjustment

## AGC Adjustment

Test Points:	Demod-21 (AGC)	Main
Adjust:	R810F (AGC)	Demodulator

1. Set the *TV/VCR* switch to the VCR position and the *Tuner/Line* switch to the TUNER position.

2. Supply a 199.25MHz/-46dBm signal to the VHF antenna terminal. Modulate the RF signal 87.5% with an NTSC color bar (video) signal.
3. Tune in the RF channel supplied by the signal generator.
4. Connect a DVM to Demod-21.
5. Adjust the AGC control (R810F) for  $8.0\text{V} +1.0\text{V VDC.}$   
 $-0.2\text{V}$

## Audio IF/Audio Level Adjust

Adjust:	R890F (Audio Level)	Demodulator
---------	---------------------	-------------

1. Place the *TV/VCR* switch in the TV position and tune in a local channel.
2. Adjust the volume on the TV for a normal listening volume.
3. Place the *TV/VCR* switch in the VCR position and tune in the same local channel using the VCR's Tuner.
4. Adjust the *Audio Level* control (R890F) for equal volume while in the VCR position.

## OSD Horizontal Calibration Adjustment (Fig. 14)

Adjust:	RT52G (OSD Horizontal Calibration)	OSD
Observe:	Monitor	

This adjustment regulates the horizontal width of the characters displayed on the monitor screen.

1. Turn the instrument on and allow it to warm up for approximately three minutes.
2. Press the *Program* button on the remote control hand unit to display the program menu on the monitor screen.
3. Adjust the *OSD Horizontal Calibration* control (RT52G) so that the characters (TO END PUSH PROGRAM) are centered horizontally on the screen.

TO SELECT MODE  
PUSH NUMBER SHOWN  
1 CLOCK SET  
2 NORMAL PROGRAM  
3 DAILY PROGRAM  
4 WEEKLY PROGRAM  
5 PROGRAM REVIEW  
TO END PUSH PROGRAM

Fig. 14 OSD Horizontal Calibration

**ELECTRICAL ADJUSTMENTS (Continued)****AFC Adjustment**

This adjustments the free-running horizontal frequency to 15.734kHz.

Test Point:	TP1G (H. SYNC)	Character Gen.
Adjust:	RT93G (AFC)	Character Gen.

**Note:** Set the input level switch of scope probe to 10:1.

1. Apply an NTSC color bar signal to the video input jack on the rear panel.
2. Set the VCR/TV select switch to "VCR" and the LINE/TUNER/SIMULCAST select switch to "LINE" position.
3. Connect a frequency counter to TP1G.
4. Adjust the ALC Control (RT93G) for 15.734kHz  $\pm$  0.2kHz.

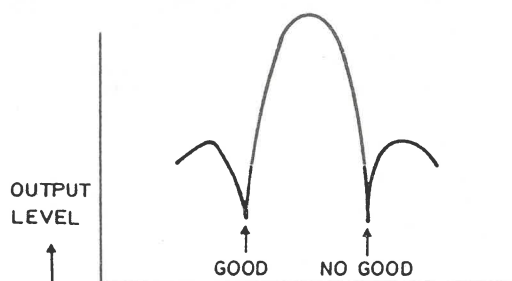
## AUDIO MPX ADJUSTMENTS

### Stereo/SAP Filter Adjustment

This adjustment sets the cutoff frequency of the voltage controlled filter in the MTS processor IC1S to separate the stereo/SAP component from the incoming MPX composite signal. If this adjustment is incomplete, the stereo or SAP frequency response deteriorates.

Test Point:	IC1S-(6) (SAP BPF OUT)	Audio MPX
Adjust:	RV1S (Stereo/SAP Filter)	Audio MPX

1. Set the LINE/TUNER/SIMULCAST select switch to "LINE" and turn "ON" the SAP SET switch on the front panel. (No signal in Audio Input Jack)
2. Turn the MPX Input Level Control (RT451) fully counterclockwise (components side) on the Audio/Dolby NR circuit board.
3. Connect an audio oscillator between C453 on the Audio/Dolby NR circuit board (negative side) and chassis (GND) and apply the audio oscillator output  $62.936 \pm 1\text{kHz}$ ,  $150 \pm 20\text{mVrms}$  ( $424\text{mVp-p} \pm 57\text{mVp-p}$  on scope).
4. Connect a millivoltmeter (or scope) between IC1S-(6) and chassis (GND).
5. Turn the Stereo/SAP Filter Control (RV1S) fully counterclockwise (components side), then turn it gradually clockwise and adjust it where the millivoltmeter (or scope) first reads a minimum. (See Fig. 15)
6. Remove the jumper.



### SAP VCO Adjustment

This adjustment sets the control voltage applied to the SAP VCO in the MTS processor IC1S to specified value of IC1S when an SAP carrier signal (5 fH) is applied. If this adjustment is incomplete, an SAP signal cannot be discriminated.

Test Point:	IC1S-(25) (SAP DET. OUT)	Audio MPX
Adjust:	RV2S (SAP VCO)	Audio MPX

1. Set the LINE/TUNER/SIMULCAST select switch to "LINE" and turn "ON" the SAP SET switch on the front panel. (No signal in Audio Input Jack)
2. Turn the MPX Input Level Control (RT451) fully counterclockwise (components side) on the Audio/Dolby NR circuit board.
3. Connect a jumper between Audio MPX terminal-(10) and Audio MPX terminal-(15).

4. Connect a DVM between IC1S-(25) and chassis (GND) and read the DC voltage.
5. Remove the jumper between Audio MPX terminal-(10) and Audio MPX terminal-(15).
6. Connect a jumper between Audio MPX terminal-(10) and Audio MPX terminal-(17).
7. Connect an audio oscillator between C453 on the Audio/Dolby NR circuit board (negative side) and chassis (GND) and apply the audio oscillator output  $78.67 \pm 0.1\text{kHz}$ ,  $150 \pm 20\text{mVrms}$  ( $424\text{mVp-p} \pm 57\text{mVp-p}$  on scope).
8. Adjust the SAP VCO Control (RV2S) so the reading of ????

### Stereo VCO Adjustment

This adjustment sets the free-running frequency of the stereo VCO in the MTS processor IC1S to 4 fH (62.936 kHz). If this adjustment is incomplete, a stereo signal cannot be discriminated.

Test Point:	IC1S-(32) (Stereo VCO)	Audio MPX
Adjust:	RV4S (Stereo VCO)	Audio MPX

**Note:** Set the probe to 10:1. Use the oscilloscope with output terminal.

1. Set the LINE/TUNER/SIMULCAST select switch to "LINE" and turn "ON" the SAP SET switch on the front panel. (No signal in Audio Input Jack)
2. Turn the MPX Input Level Control (RT451) fully counterclockwise (components side) on the Audio/Dolby NR circuit board.
3. Connect the output terminal of oscilloscope to the frequency counter.
4. Connect a scope probe between IC1S-(32) and Audio MPX chassis (GND).
5. Adjust the Stereo VCO Control (RV4S) for  $62.936 \pm 0.2\text{kHz}$ .

### Pilot Cancel Adjustment

This adjustment minimizes the stereo/monaural discrimination pilot signal entering the audio output. If this adjustment is incomplete, the pilot signal leaks into the audio output.

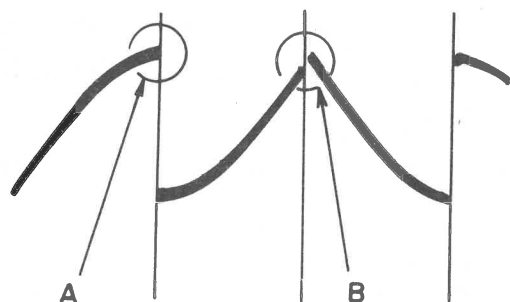
Test Point:	IC1S-(40) (L-R DET. OUT)	Audio MPX
Adjust:	RV5S (Pilot Cancel)	Audio MPX

1. Set the LINE/TUNER/SIMULCAST select switch to "LINE" and turn "ON" the SAP SET switch on the front panel. (No signal in Audio Input Jack)
2. Turn the MPX Input Level Control (RT451) fully counterclockwise (components side) on the Audio/Dolby NR circuit board.
3. Connect an audio oscillator between C453 on the Audio/Dolby NR circuit board (negative side) and chassis (GND) and apply the audio oscillator output  $15.734 \pm 0.2\text{kHz}$ ,  $50 \pm 3\text{mVrms}$  ( $141\text{mVp-p} \pm 8\text{mVp-p}$  on scope).



## AUDIO MPX ADJUSTMENTS (Continued)

4. Connect a scope probe (50mV/div.; 5 $\mu$ s/div.) between IS1S-(40) and chassis (GND).
5. Adjust the Pilot Cancel Control (RV5S) so the heights of the waveforms at sections A and B are equal. (See Fig. 16)



### MPX Input Level Adjustment

This adjustment sets the input level of the MPX signal applied to the MTS processor IC1S from the tuner/demodulator to the specified level. If this adjustment is incomplete, the S/N deteriorates or distortion becomes great.

Test Point:	C453 (negative side) (MPX IN)	Audio MPX
Adjust:	RT451 (MPX Input Level)	Audio MPX

1. Set the MTS sound signal generator as follows.  
AUDIO FREQ.: 300Hz      MOD. SIGNAL: L + R  
CH SELECT: CH3
2. Apply the RF output of the MTS sound signal generator to the VHF input jack on the rear panel.
3. Set the VCR/TV select switch to "VCR" and the SAP SET switch on the VCR and the LINE/TUNER/SIMULCAST switch to "TUNER" and then select channel 3.
4. Turn the SAP switch on.
5. Connect a millivoltmeter (or scope) between C453 on the Audio/Dolby/NR circuit board (negative side) and chassis (GND).
6. Adjust the MPX Input Level Control (RT451) for  $116 \pm 3$  mVrms ( $328 \pm 8$  mVp-p on scope).

### L-R Frequency Response Adjustment

This adjustment corrects the frequency response of the L-R signal. If this adjustment is incomplete, the stereo separation in high frequencies deteriorates.

Test Point:	IC1S-(27) (Lch Audio Out)	Audio MPX
Adjust:	RV6S (L-R Frequency Response)	Audio MPX

1. Set the MTS sound signal generator as follows.  
AUDIO FREQ.: 8kHz      MOD. SIGNAL: L  
PILOT: ON
2. Apply the RF output of the MTS sound signal generator to the VHF input jack on the rear panel.

3. Set the VCR/TV select switch to "VCR" and the SAP SET switch on the VCR and the LINE/TUNER/SIMULCAST switch to "TUNER" and then select channel 3.
4. Set the MONO/STEREO select switch "STEREO" position.
5. Connect a millivoltmeter (or scope) between MPX Terminal-(12) and chassis (GND) and read the value.
6. Connect the millivoltmeter (or scope) between Audio IC1S-(27) and chassis (GND) and adjust the L-R Frequency Response control (RV6S) so the reading of the millivoltmeter (or scope) is within  $\pm 3$  mVrms ( $\pm 8$  mVp-p on scope) of the value in step 5).
7. After step 6 is completed, perform the next L-R Output Level Adjustment.

### L-R Output Level Adjustment

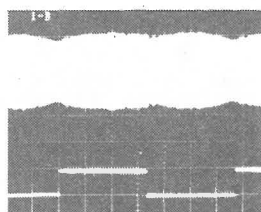
This adjustment sets the output level of the L-R demodulator in the MTS processor IC1S to determine the stereo output level of the both channel signals applied to the linear/FM audio processing circuit. If this adjustment is incomplete, the stereo separation in low frequencies deteriorates.

Test Point:	IC1S-(27) (Lch Audio Out)	Audio MPX
Adjust:	RV3S (L-R Output Level)	Audio MPX

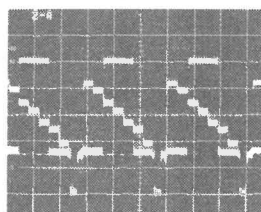
1. Set the L-R Frequency Response Control (RV6S) to the center.
2. Set the MTS sound signal generator as follows.  
AUDIO FREQ.: 300Hz      MOD. SIGNAL: L  
PILOT: ON      CH SELECT: CH3
3. Set the VCR/TV select switch to "VCR" and the SAP SET switch on the VCR and the LINE/TUNER/SIMULCAST switch to "TUNER" and then select channel 3.
4. Set the MONO/STEREO select switch "STEREO" position.
5. Apply the RF output of the MTS sound signal generator to the VHF input jack on the rear panel.
6. Connect a millivoltmeter (or scope) between MPX Terminal-12 and chassis (GND) and read the value.
7. Connect the millivoltmeter (or scope) between Audio IC1S-(27) and chassis (GND) and adjust the L-R Output Level control (RV3S) so the reading of the millivoltmeter (or scope) is within  $\pm 3$  mVrms ( $\pm 8$  mVp-p on scope) of the value in step 6.
8. After step 7 is completed, perform the next L-R Frequency Response Adjustment.

## 2-A2

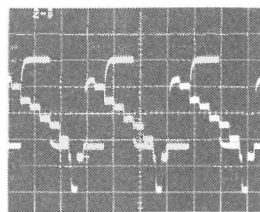
### LUMA/CHROMA WAVEFORMS



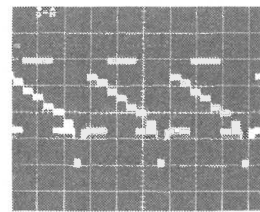
① TP201 300.0mVp-p  
.1V/5.0msec/cm  
PLAY



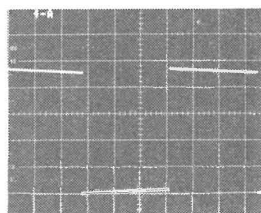
② TP202 1.0Vp-p  
0.2V/20.0μsec/cm  
REC



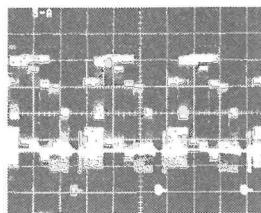
② TP202 1.0Vp-p  
0.2V/20.0μsec/cm  
PLAY



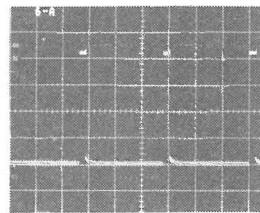
③ TP206 400.0mVp-p  
0.1V/20.0μsec/cm  
PLAY



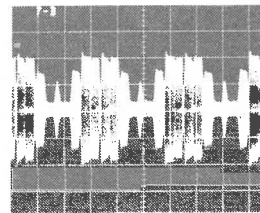
④ TP503 4.8Vp-p  
1V/5.0msec/cm  
REC/PLAY



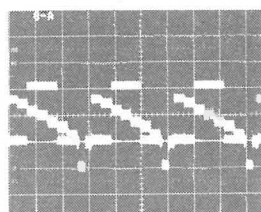
⑤ IC201-1 1.0Vp-p  
0.2V/20.0μsec/cm  
REC/PLAY



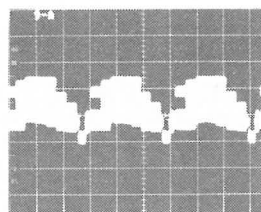
⑥ IC201-3 4.2Vp-p  
1V/20.0μsec/cm  
REC/PLAY



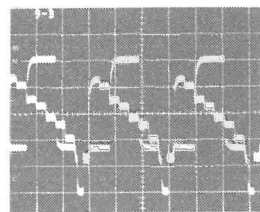
⑦ IC201-5 400.0mVp-p  
.1V/20.0μsec/cm  
PLAY



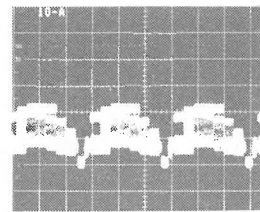
⑧ IC201-7 310.0mVp-p  
0.1V/20.0μsec/cm  
REC/PLAY



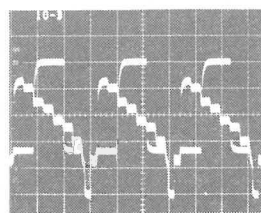
⑨ IC201-8 230.0mVp-p  
0.1V/20.0μsec/cm  
REC



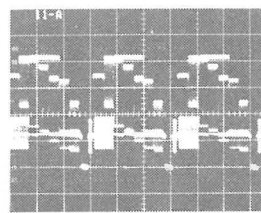
⑨ IC201-8 1.0Vp-p  
0.2V/20.0μsec/cm  
PLAY



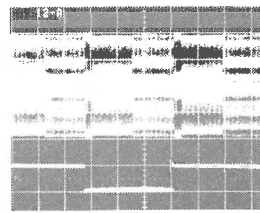
⑩ IC201-9 230.0mVp-p  
0.1V/20.0μsec/cm  
REC



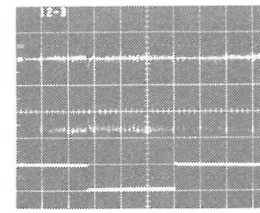
⑩ IC201-9 1.0Vp-p  
0.2V/20.0μsec/cm  
PLAY



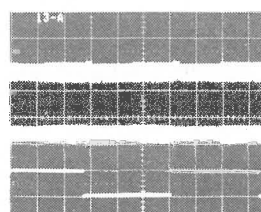
⑪ IC201-11 2.1Vp-p  
0.5V/20.0μsec/cm  
REC/PLAY



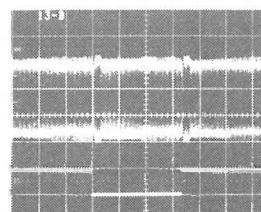
⑫ IC201-17 400.0mVp-p  
0.1V/5.0msec/cm  
REC



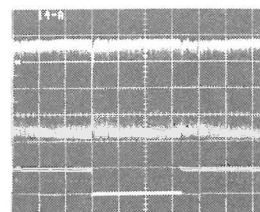
⑫ IC201-17 340.0mVp-p  
0.1V/5.0msec/cm  
PLAY



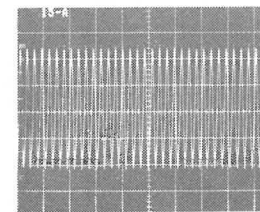
⑬ IC201-18 310.0mVp-p  
0.1V/5.0msec/cm  
REC



⑬ IC201-18 320.0mVp-p  
0.1V/5.0msec/cm  
PLAY



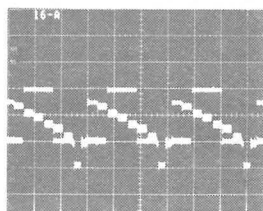
⑭ IC201-19 400.0mVp-p  
0.1V/5.0msec/cm  
REC



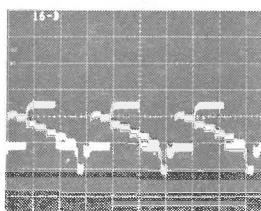
⑮ IC201-22 210.0mVp-p  
50mV/500nsec/cm  
REC/PLAY

## 2-A3

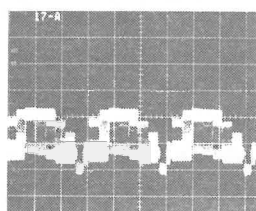
### LUMA/CHROMA WAVEFORMS (Continued)



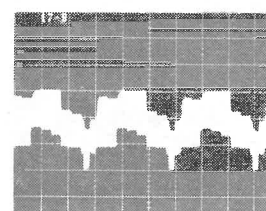
16 IC201-24 600.0mVp-p  
0.2V/20.0μsec/cm  
REC



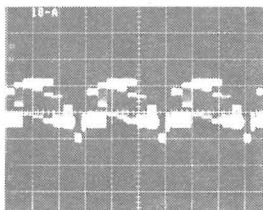
16 IC201-24 498.0mVp-p  
0.2V/20.0μsec/cm  
PLAY



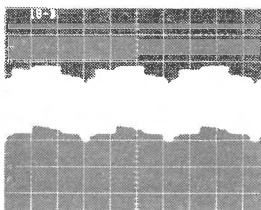
17 IC201-26 219.0mVp-p  
0.1V/20.0μsec/cm  
REC



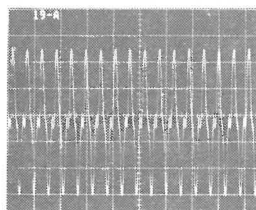
17 IC201-26 299.0mVp-p  
0.1V/20.0μsec/cm  
PLAY



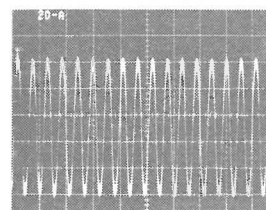
18 IC201-27 219.0mVp-p  
0.1V/20.0μsec/cm  
REC



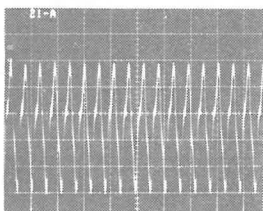
18 IC201-27 558.0mVp-p  
0.2V/20.0μsec/cm  
PLAY



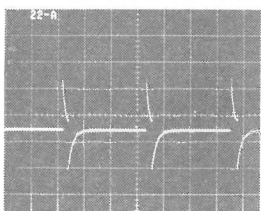
19 IC202-1 1.1Vp-p  
0.2V/500nsec/cm  
REC/PLAY



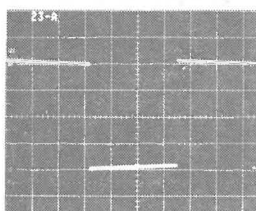
20 IC202-2 498.0mVp-p  
0.1V/500nsec/cm  
REC/PLAY



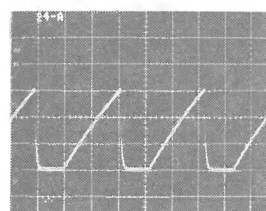
21 IC202-3 498.0mVp-p  
0.1V/500nsec/cm  
REC/PLAY



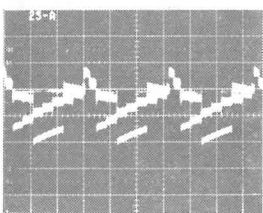
22 IC202-8 7.0Vp-p  
2V/20.0μsec/cm  
REC/PLAY



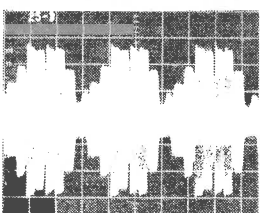
23 IC202-10 4.2Vp-p  
1V/5.0msec/cm  
REC/PLAY



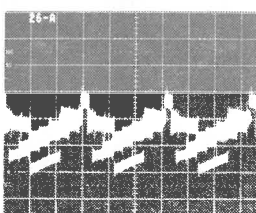
24 IC202-12 1.6Vp-p  
0.5V/20.0μsec/cm  
REC/PLAY



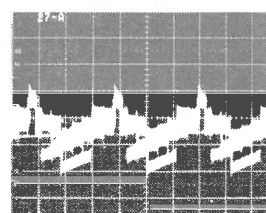
25 IC202-13 279.0mVp-p  
0.1V/20.0μsec/cm  
REC



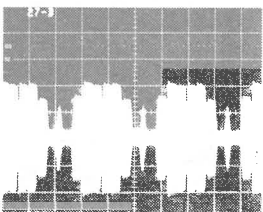
25 IC202-13 280.0mVp-p  
50mV/20.0μsec/cm  
PLAY



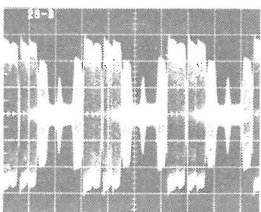
26 IC202-14 279.0mVp-p  
0.1V/20.0μsec/cm  
REC/PLAY



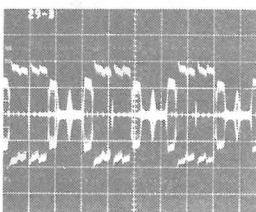
27 IC202-15 279.0mVp-p  
0.1V/20.0μsec/cm  
REC



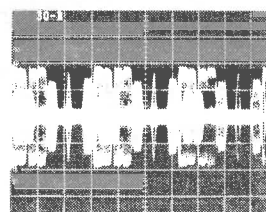
27 IC202-15 801.0mVp-p  
0.2V/20.0μsec/cm  
PLAY



28 IC202-17 290.0mVp-p  
50mV/20.0μsec/cm  
PLAY



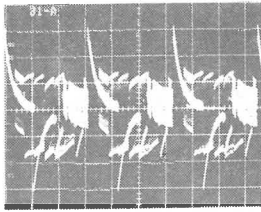
29 IC202-19 798.0mVp-p  
2V/20.0μsec/cm  
PLAY



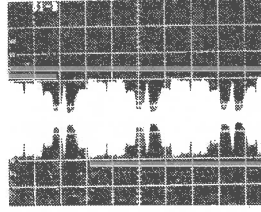
30 IC202-21 399.0mVp-p  
1V/20.0μsec/cm  
PLAY

## 2-A4

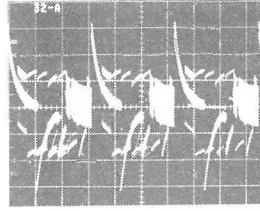
### LUMA/CHROMA WAVEFORMS (Continued)



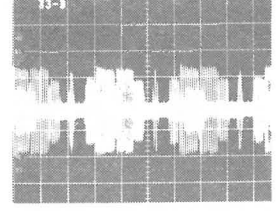
31 IC202-23 1.2Vp-p  
0.2V/20.0μsec/cm  
REC



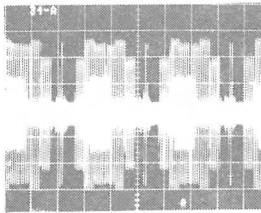
31 IC202-23 1.5Vp-p  
0.5V/20.0μsec/cm  
PLAY



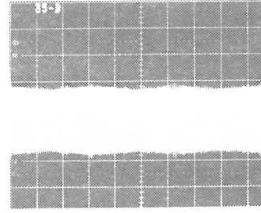
32 IC202-25 1.2Vp-p  
0.2V/20.0μsec/cm  
REC



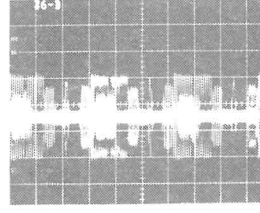
33 IC202-26 699.0mVp-p  
.2V/20.0μsec/cm  
PLAY



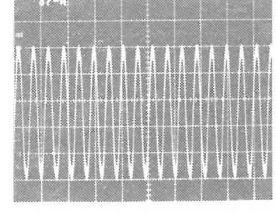
34 IC202-27 559.0mVp-p  
0.1V/20.0μsec/cm  
REC



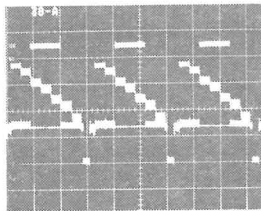
35 IC202-28 300.0mVp-p  
.1V/20.0μsec/cm  
PLAY



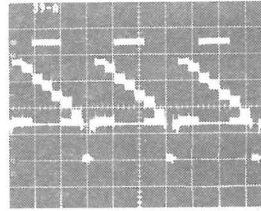
36 IC202-30 599.0mVp-p  
.2V/20.0μsec/cm  
PLAY



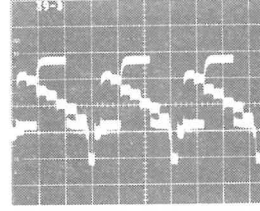
37 IC202-41 500.0mVp-p  
0.1V/500nsec/cm  
REC/PLAY



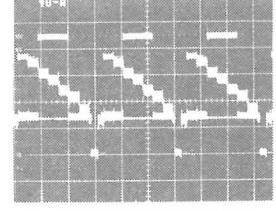
38 IC203-1 899.0mVp-p  
0.2V/20.0μsec/cm  
REC/PLAY



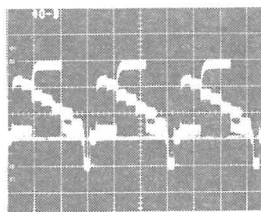
39 IC203-2 899.0mVp-p  
0.2V/20.0μsec/cm  
REC



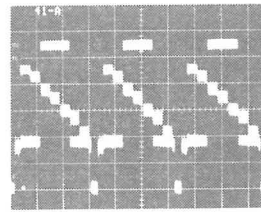
39 IC203-2 752.0mVp-p  
0.2V/20.0μsec/cm  
PLAY



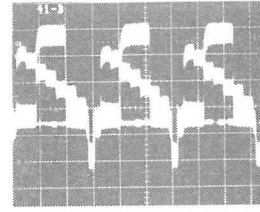
40 IC203-4 901.0mVp-p  
0.2V/20.0μsec/cm  
REC



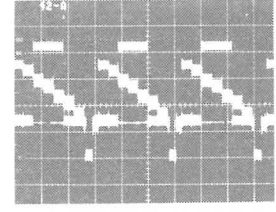
40 IC203-4 749.0mVp-p  
0.2V/20.0μsec/cm  
PLAY



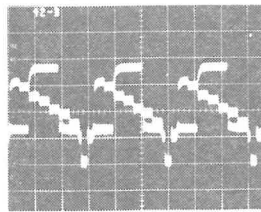
41 IC203-6 270.0mVp-p  
50mV/20.0μsec/cm  
REC



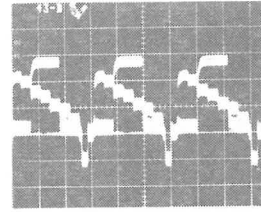
41 IC203-6 239.0mVp-p  
50mV/20.0μsec/cm  
PLAY



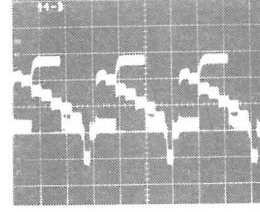
42 IC203-10 409.0mVp-p  
0.1V/20.0μsec/cm  
REC



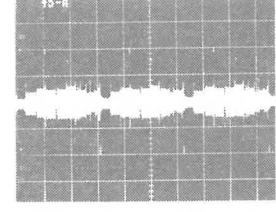
42 IC203-10 358.0mVp-p  
0.1V/20.0μsec/cm  
PLAY



43 IC203-11 368.0mVp-p  
.1V/20.0μsec/cm  
PLAY



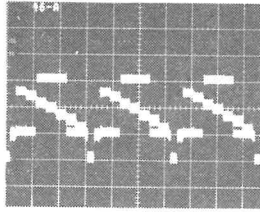
44 IC203-15 368.0mVp-p  
.1V/20.0μsec/cm  
PLAY



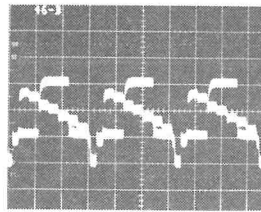
45 IC203-16 800.0mVp-p  
0.2V/20.0μsec/cm  
REC



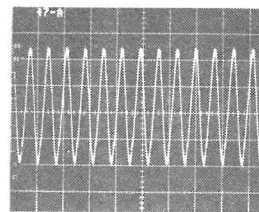
## LUMA/CHROMA WAVEFORMS (Continued)



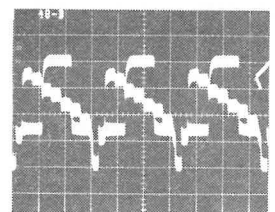
46 IC204-6 299.0mVp-p  
0.1V/20.0μsec/cm  
REC



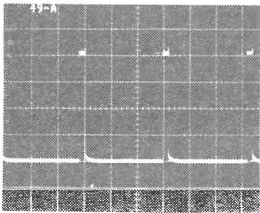
46 IC204-6 299.0mVp-p  
0.1V/20.0μsec/cm  
PLAY



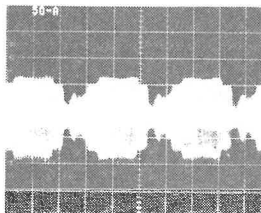
47 IC204-7 430.0mVp-p  
0.1V/200nsec/cm  
REC/PLAY



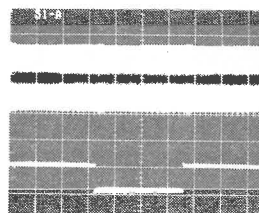
48 IC205-11 399.0mVp-p  
.1V/20.0μsec/cm  
PLAY



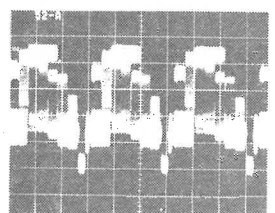
49 IC205-13 4.0Vp-p  
1V/20.0μsec/cm  
REC/PLAY



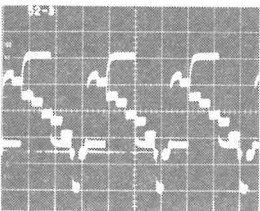
50 IC205-21 338.0mVp-p  
0.1V/20.0μsec/cm  
REC



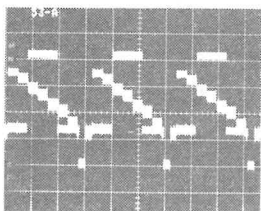
51 IC205-22 501.0mVp-p  
0.2V/5.0msec/cm  
REC



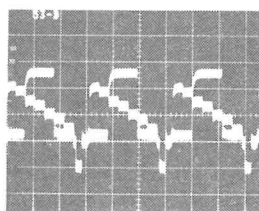
52 IC205-24 220.0mVp-p  
50mV/20.0μsec/cm  
REC



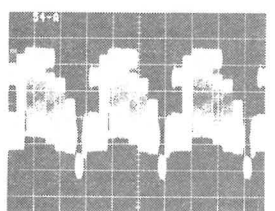
52 IC205-24 1.0Vp-p  
0.2V/20.0μsec/cm  
PLAY



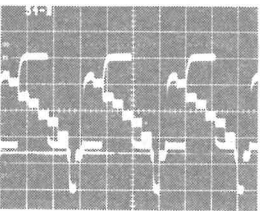
53 IC205-25 418.0mVp-p  
0.1V/20.0μsec/cm  
REC



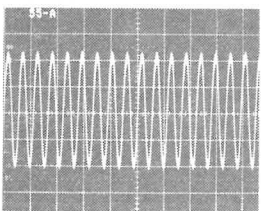
53 IC205-25 358.0mVp-p  
0.1V/20.0μsec/cm  
PLAY



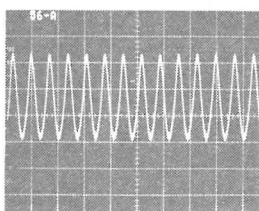
54 IC205-27 210.0mVp-p  
50mV/20.0μsec/cm  
REC



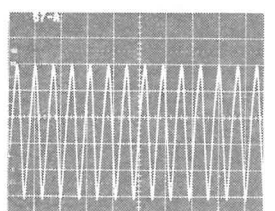
54 IC205-27 1.0Vp-p  
0.2V/20.0μsec/cm  
PLAY



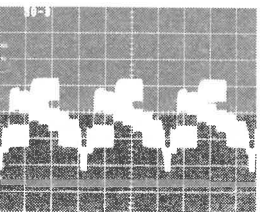
55 IC206-1 418.0mVp-p  
0.1V/500nsec/cm  
REC/PLAY



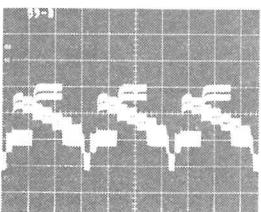
56 IC206-3 648.0mVp-p  
0.2V/200nsec/cm  
REC/PLAY



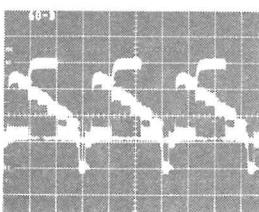
57 IC206-5 1.0Vp-p  
0.2V/200nsec/cm  
REC/PLAY



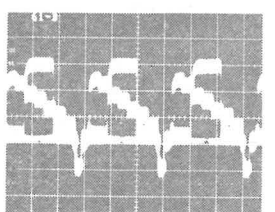
58 IC206-8 1.4Vp-p  
.5V/20.0μsec/cm  
PLAY



59 IC206-9 1.4Vp-p  
.5V/20.0μsec/cm  
PLAY

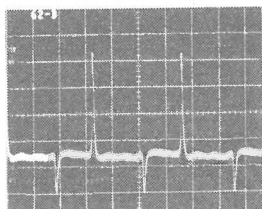


60 IC206-12 399.0mVp-p  
.1V/20.0μsec/cm  
PLAY

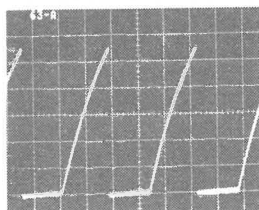


61 IC206-13 399.0mVp-p  
.1V/20.0μsec/cm  
PLAY

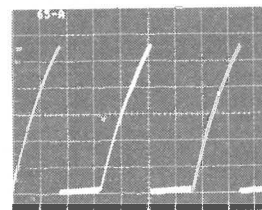
## SERVO/SYSTEM CONTROL WAVEFORMS



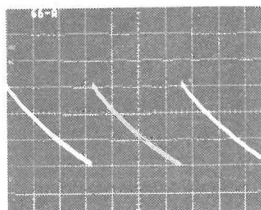
62 TP605 2.6Vp-p  
0.5V/10.0msec/cm  
PLAY



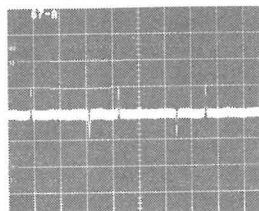
63 TP609 2.8Vp-p  
0.5V/10.0msec/cm  
REC/PLAY



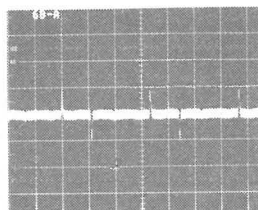
65 IC601-2 2.8Vp-p  
0.5V/10.0msec/cm  
REC/PLAY



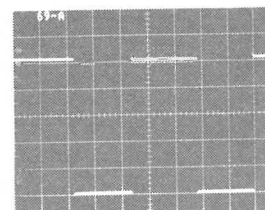
66 IC601-3 629.0mVp-p  
0.2V/10.0msec/cm  
REC/PLAY



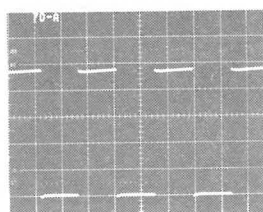
67 IC601-4 209.0mVp-p  
0.1V/10.0msec/cm  
REC/PLAY



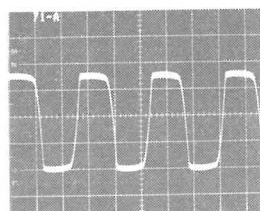
68 IC601-5 209.0mVp-p  
0.1V/10.0msec/cm  
REC/PLAY



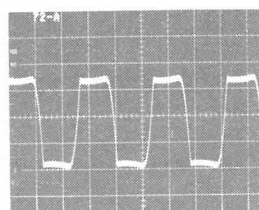
69 IC601-11 5.0Vp-p  
1V/500μsec/cm  
REC/PLAY



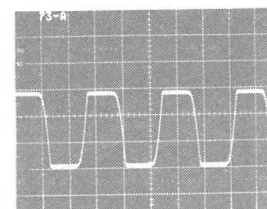
70 IC601-22 4.6Vp-p  
1V/100μsec/cm  
REC/PLAY



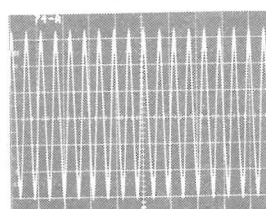
71 IC601-28 699.0mVp-p  
0.2V/500μsec/cm  
REC/PLAY



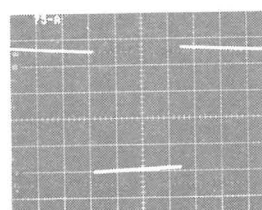
72 IC601-29 699.0mVp-p  
0.2V/500μsec/cm  
REC/PLAY



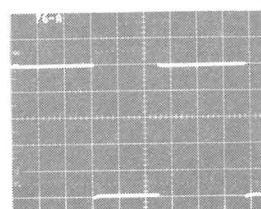
73 IC601-30 1.4Vp-p  
0.5V/500μsec/cm  
REC/PLAY



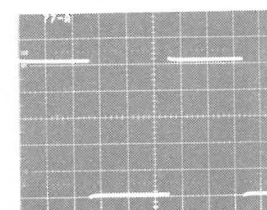
74 IC601-32 299.0mVp-p  
50mV/500nsec/cm  
REC/PLAY



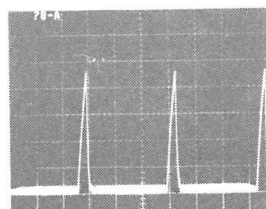
75 IC601-42 4.7Vp-p  
1V/5.0msec/cm  
REC/PLAY



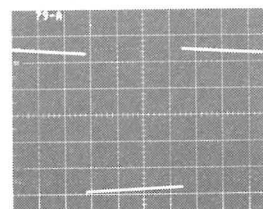
76 IC601-43 5.0Vp-p  
1V/100μsec/cm  
REC/PLAY



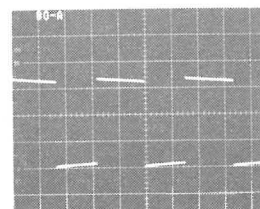
77 IC601-44 5.0Vp-p  
1V/100μsec/cm  
REC/PLAY



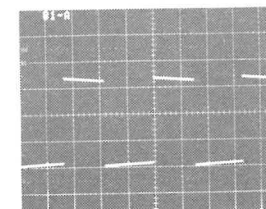
78 IC601-45 2.3Vp-p  
0.5V/5.0msec/cm  
REC/PLAY



79 IC601-57 5.5Vp-p  
1V/5.0msec/cm  
REC/PLAY



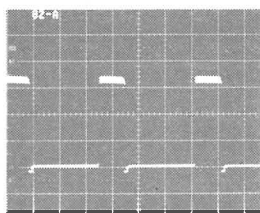
80 IC601-59 3.4Vp-p  
1V/10.0msec/cm  
REC



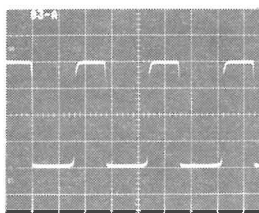
81 IC601-60 3.4Vp-p  
1V/10.0msec/cm  
REC

## 2-A7

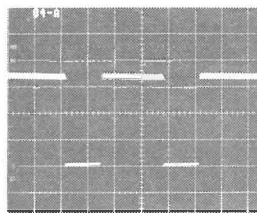
### SERVO/SYSTEM CONTROL WAVEFORMS (Continued)



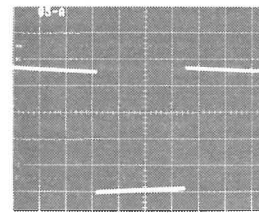
82 IC602-1 17.0Vp-p  
5V/5.0 $\mu$ sec/cm  
REC/PLAY



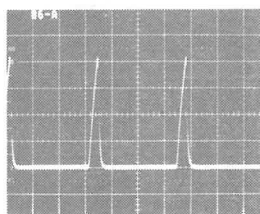
83 IC603-3 4.0Vp-p  
1V/1.0msec/cm  
REC/PLAY



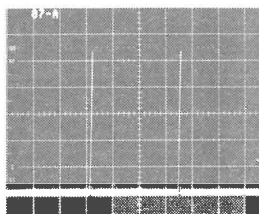
84 IC603-12 17.0Vp-p  
5V/5.0 $\mu$ sec/cm  
REC/PLAY



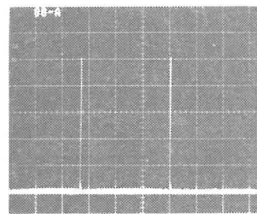
85 IC605-3 4.8Vp-p  
1V/5.0msec/cm  
REC/PLAY



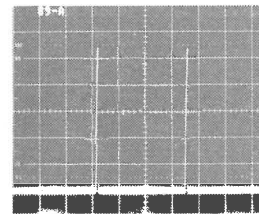
86 IC605-4 2.1Vp-p  
0.5V/5.0msec/cm  
REC/PLAY



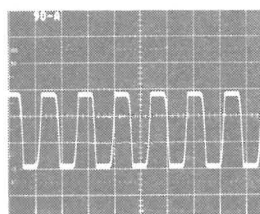
87 IC605-12 2.6Vp-p  
0.5V/5.0msec/cm  
REC/PLAY



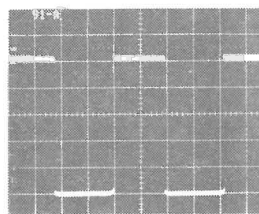
88 IC605-13 2.6Vp-p  
0.5V/5.0msec/cm  
REC/PLAY



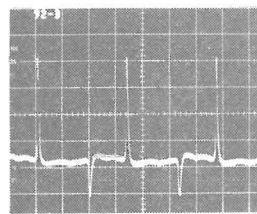
89 IC605-14 2.6Vp-p  
0.5V/5.0msec/cm  
REC/PLAY



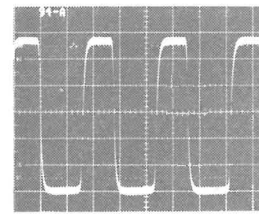
90 IC605-27 1.4Vp-p  
0.5V/1.0msec/cm  
REC/PLAY



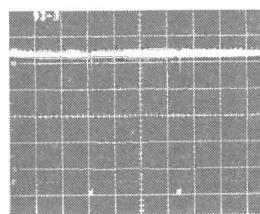
91 IC605-28 5.0Vp-p  
1V/1.0msec/cm  
REC/PLAY



92 IC605-29 2.5Vp-p  
.5V/10.0msec/cm  
PLAY



93 IC605-30 5.3Vp-p  
1V/10.0msec/cm  
PLAY



94 IC605-31 1.1Vp-p  
0.2V/1.0msec/cm  
REC/PLAY

## MAIN LUMA CHROMA VOLTAGE CHARTS

MODE	IC201						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	3.7	3.7	3.7	3.7	3.7	3.7	3.7
PIN 2	0.3	0.3	2.6	0.3	0.3	2.6	2.6
PIN 3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
PIN 4	3.4	3.4	3.4	3.4	3.3	3.4	3.4
PIN 5	0	0	0	0	0	0	0
PIN 6	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 7	3.1	3.1	3.1	3.1	3.1	3.1	3.1
PIN 8	2.4	2.4	2.6	2.4	2.4	2.6	2.6
PIN 9	3.7	3.7	3.9	3.7	3.7	4.0	4.0
PIN 10	4.6	4.6	4.6	4.6	4.6	4.6	4.6
PIN 11	2.0	2.0	2.1	2.1	2.1	2.1	2.1
PIN 12	0	0	5.1	0	0	5.1	5.1
PIN 13	2.6	2.5	3.2	2.6	2.6	3.2	3.2
PIN 14	1.6	1.6	3.9	1.6	1.6	4.0	4.0

MODE	IC201						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 15	0	0	0	0	0	0	0
PIN 16	2.8	2.8	0.3	2.8	2.8	0.6	0.6
PIN 17	3.8	3.8	3.9	3.8	3.8	3.9	3.9
PIN 18	1.2	1.2	1.1	1.2	1.2	1.1	1.1
PIN 19	3.2	3.3	3.3	3.3	3.3	3.3	3.3
PIN 20	1.5	1.5	1.5	1.5	1.5	1.5	1.5
PIN 21	0	0	0	0	0	0	0
PIN 22	7.2	7.2	7.2	7.2	7.2	7.2	7.2
PIN 23	2.7	2.6	2.6	2.7	2.7	2.6	2.6
PIN 24	2.9	2.9	2.9	2.9	2.9	2.8	2.9
PIN 25	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PIN 26	2.7	2.7	2.7	2.7	2.7	2.6	2.7
PIN 27	2.4	2.4	2.3	2.4	2.4	2.3	2.3
PIN 28	1.4	1.3	1.6	1.3	1.3	1.6	1.6

MODE	IC202						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	3.9	3.9	3.9	3.9	3.9	3.9	3.9
PIN 2	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 3	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 4	2.2	2.2	2.2	2.2	2.2	2.3	2.3
PIN 5	2.3	2.3	2.3	2.3	2.3	2.3	2.3
PIN 6	2.3	2.3	2.0	2.3	2.3	2.0	2.0
PIN 7	2.3	2.0	2.3	2.0	2.0	2.3	2.3
PIN 8	0	0	0	0	0	0	0
PIN 9	4.2	4.2	4.2	4.2	4.2	4.2	4.2
PIN 10	-	2.0	2.0	-	-	2.0	2.0
PIN 11	0	0	0	0	0	0	0
PIN 12	0.6	0.6	0.6	0.6	0.6	0.6	0.6
PIN 13	0	0	0	0	0	0	0
PIN 14	3.6	3.6	1.8	3.6	3.6	1.8	1.8
PIN 15	2.9	3.0	3.1	2.9	2.9	3.1	3.1
PIN 16	1.5	1.5	1.5	1.5	1.5	1.5	1.5
PIN 17	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 18	0	0	5.1	0	0	5.1	5.1
PIN 19	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 20	0.7	0.7	0.7	0.7	0.7	0.7	0.7
PIN 21	4.3	4.3	4.3	4.3	4.3	4.3	4.3

MODE	IC202						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 22	0	0	0	0	0	0	0
PIN 23	3.2	3.2	3.0	3.2	3.2	3.0	3.0
PIN 24	3.7	3.8	3.7	3.7	3.7	3.7	3.7
PIN 25	3.2	3.2	1.9	3.2	3.2	1.9	1.9
PIN 26	1.3	1.3	2.2	1.3	1.3	2.2	2.2
PIN 27	4.0	4.0	0	4.0	4.0	0	0
PIN 28	0	0	3.6	0	0	3.6	3.6
PIN 29	4.3	4.3	4.3	4.3	4.3	4.3	4.3
PIN 30	4.4	4.5	3.8	4.4	4.4	3.7	3.7
PIN 31	3.6	3.6	3.6	3.6	3.6	3.6	3.6
PIN 32	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 33	4.2	4.2	4.2	4.2	4.2	4.2	4.2
PIN 34	3.6	3.6	3.6	3.6	3.6	3.6	3.6
PIN 35	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 36	3.6	3.6	3.6	3.6	3.6	3.6	3.6
PIN 37	3.4	3.4	3.4	3.4	3.4	3.4	3.4
PIN 38	2.9	3.0	2.9	2.9	2.9	2.9	2.9
PIN 39	2.0	-	2.3	2.3	2.3	2.3	2.3
PIN 40	2.2	2.2	2.2	2.2	2.2	2.2	2.2
PIN 41	1.4	1.4	1.4	1.4	1.4	1.4	1.4
PIN 42	0	0	0	0	0	0	0



## 2-C2

### MAIN LUMA CHROMA VOLTAGE CHARTS (Continued)

MODE	IC203						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	4.0	4.0	4.0	4.0	4.0	4.0	4.0
PIN 2	4.8	4.7	4.7	4.8	4.8	4.7	4.7
PIN 3	9.0	9.1	0	9.1	9.1	0	0
PIN 4	5.5	5.5	5.5	5.5	5.5	5.5	5.5
PIN 5	0.8	0.8	0.8	0.8	0.8	0.8	0.8
PIN 6	1.5	1.5	1.5	1.5	1.5	1.5	1.5
PIN 7	0	0	5.1	0	0	5.1	5.1
PIN 8	0	0	0	0	0	0	0
PIN 9	2.2	2.2	2.2	2.2	2.2	2.2	2.2
PIN 10	6.2	6.2	6.2	6.2	6.2	6.2	6.2
PIN 11	8.6	8.6	6.8	8.6	8.6	6.8	6.8
PIN 12	4.0	4.1	4.1	4.1	4.1	4.1	4.1
PIN 13	8.6	8.6	6.8	8.6	8.6	6.8	6.8
PIN 14	9.1	9.1	9.1	9.1	9.1	9.1	9.1
PIN 15	8.6	8.6	6.8	8.6	8.6	6.8	6.8
PIN 16	5.9	5.9	8.3	5.9	5.9	8.3	8.3

MODE	IC204						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
PIN 2	0	0	0	0	0	0	0
PIN 3	0	0	5.1	0	0	5.0	5.0
PIN 4	6.2	6.1	3.3	6.1	6.1	3.3	3.3
PIN 5	-	-	3.0	-	-	3.2	3.2
PIN 6	1.6	-	2.3	1.6	1.6	2.4	2.4
PIN 7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
PIN 8	3.0	3.0	5.1	3.0	3.0	5.1	5.1

MODE	IC205						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	5.1	5.1	0	5.1	5.1	0	0
PIN 2	0	0	0	0	0	4.3	4.3
PIN 3	0	7.4	0	0	0	0	0
PIN 4	0.4	0	5.0	0.4	0.4	5.0	5.0
PIN 5	0	0	0	0	0	0	0
PIN 6	3.0	3.0	0.8	2.9	2.9	0.9	0.9
PIN 7	2.8	2.8	0.3	2.8	2.8	0.6	0.6
PIN 8	0.3	8.9	0.2	0.2	0.2	0.2	0.2
PIN 9	4.6	4.6	4.6	4.6	4.6	4.6	4.6
PIN 10	2.4	2.5	2.6	2.4	2.4	2.6	2.6
PIN 11	3.0	3.0	2.9	3.0	3.0	3.0	3.0
PIN 12	0	0	5.1	0	0	5.1	5.1
PIN 13	0.4	0.4	0.4	0.4	0.4	0.4	0.4
PIN 14	0	3.0	0	0	0	0	0

MODE	IC205						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 15	0	0	0	0	0	0	0
PIN 16	0	3.0	0	0	0	0	0
PIN 17	0	9.2	0	0	0	0	0
PIN 18	0	0	0	0	0	0	0
PIN 19	0.2	0.2	0.2	0.2	0.2	0.3	0.3
PIN 20	0	4.0	0	0	0	0	0
PIN 21	-	-	-	-	-	-	-
PIN 22	3.2	3.3	3.3	3.3	3.3	3.3	3.3
PIN 23	-	-	-	-	-	-	-
PIN 24	4.3	4.3	3.3	3.3	3.3	3.3	3.3
PIN 25	3.0	3.0	3.0	3.0	3.0	3.0	3.0
PIN 26	5.3	5.3	5.3	5.3	5.3	5.3	5.3
PIN 27	3.5	3.6	2.3	3.5	3.5	2.5	2.5
PIN 28	0	0	0	0	0	0	0

## 2-C3

### MAIN LUMA CHROMA VOLTAGE CHARTS (Continued)

MODE	IC206						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	5.8	5.9	5.8	5.8	5.8	5.8	5.8
PIN 2	0	0	0	0	0	0	0
PIN 3	7.8	7.9	7.8	7.8	7.8	7.8	7.8
PIN 4	0.2	0.2	0.2	0.2	0.2	0.3	0.3
PIN 5	7.5	7.5	7.5	7.4	7.5	7.5	7.5
PIN 6	12.0	12.0	12.0	12.0	12.0	12.0	12.0
PIN 7	0	0	0	0	0	0	0
PIN 8	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 9	5.7	5.7	5.6	5.0	5.7	5.7	5.7
PIN 10	0	0	0	0	0	0	0
PIN 11	9.1	9.1	9.1	9.1	9.1	9.1	9.1
PIN 12	5.8	5.8	5.8	5.8	5.8	5.8	5.8
PIN 13	5.2	5.2	5.2	5.2	5.2	5.2	5.2
PIN 14	12.0	12.0	12.0	12.0	12.0	12.0	12.0

MODE	IC208						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 2	0	0	0	0	0	0	0
PIN 3	12.0	12.0	12.0	12.0	12.0	12.0	12.0

MODE	STOP			REC			PLAY			REW			F. FWD			REV S.			FWD S.			MODE
Tr No.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	Tr No.
Q 202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Q 202
Q 205	1.5	5.0	2.1	1.5	5.0	2.1	1.5	5.0	2.1	1.5	5.0	2.0	1.5	5.0	2.0	1.5	5.0	2.0	1.5	5.0	2.0	Q 205
Q 209	0	0	0	0	0	0	0	0	5.1	0	0	0	0	0	0	0	0	5.1	0	0	5.1	Q 209
Q 210	1.8	5.0	2.4	1.9	5.0	2.5	2.0	5.0	2.6	1.8	5.0	2.4	1.8	5.0	2.4	1.9	5.0	2.6	1.9	5.0	2.6	Q 210
Q 215	5.3	0	5.1	5.3	0	5.1	5.3	5.1	0	5.3	0	5.1	5.3	0	5.1	5.3	5.1	0	5.3	5.1	0	Q 215
Q 216	0	5.1	0	0	5.1	0	0	0	4.9	0	5.1	0	0	5.1	0	0	0	4.8	0	0	4.8	Q 216
Q 221	2.4	5.3	0	2.4	5.3	0	2.6	5.3	0	2.4	5.3	0	2.4	5.3	0	2.6	5.3	0	2.6	5.3	0	Q 221
Q 222	0	0	4.6	0	0	4.6	0	0	4.6	0	0	4.6	0	0	4.6	0	0	4.6	0	0	4.6	Q 222
Q 223	1.4	3.8	2.1	1.5	3.7	2.1	1.4	3.8	2.0	1.4	3.7	2.0	1.4	3.7	2.0	1.4	3.7	2.0	1.4	3.7	2.0	Q 223
Q 224	1.9	3.9	2.5	1.9	3.9	2.5	2.0	3.9	2.5	1.9	3.9	2.5	1.9	3.9	2.5	1.9	3.9	2.5	1.9	3.9	2.5	Q 224
Q 225	0	0	5.1	0	0	5.1	0	0	0	0	0	5.1	0	0	5.1	0	0	0	0	0	0	Q 225
Q 227	0	2.8	0	0	2.8	0	0	0.3	0	0	2.8	0	0	2.8	0	0	0.4	0	0	0.4	0	Q 227

## 2-C4

### SERVO SYSTEM CONTROL VOLTAGE CHARTS

MODE	IC601						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	5.3	5.3	5.3	5.3	5.3	5.3	5.3
PIN 2	0.8	0.8	0.8	0.8	0.8	0.7	0.7
PIN 3	0.5	1.1	1.1	0.5	0.5	1.1	1.1
PIN 4	2.1	2.0	2.0	2.1	2.1	2.1	2.1
PIN 5	2.1	2.0	2.0	2.0	2.0	2.0	2.0
PIN 6	5.2	5.2	5.2	5.2	5.2	5.2	5.2
PIN 7	0	0	0	0	0	0	0
PIN 8	0	0	0	0	0	0	0
PIN 9	4.6	4.6	4.6	4.6	4.6	4.6	4.6
PIN 10	0	0	0	0	0	0	0
PIN 11	2.6	2.8	2.9	2.6	2.6	2.7	2.7
PIN 12	0	0	0	0	0	4.3	4.3
PIN 13	1.4	1.4	1.4	1.3	1.3	1.4	1.4
PIN 14	0	0	0	0	0	0	0
PIN 15	1.6	1.6	1.6	1.6	1.6	1.6	1.6
PIN 16	0	0	0	0	0	0	0
PIN 17	0	0	0	0	0	0	0
PIN 18	0	0	0	0	0	0	0
PIN 19	0	0	0	0	0	0	0
PIN 20	0	0	0	0	0	0	0
PIN 21	0	0	0	0	0	0	0
PIN 22	5.1	2.6	2.6	5.1	5.1	3.0	3.0
PIN 23	0	0	0	0	0	0	0
PIN 24	3.3	2.7	2.6	3.3	3.3	2.7	2.7
PIN 25	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 26	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 27	0	3.0	3.0	0	0	3.5	3.5
PIN 28	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 29	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 30	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 31	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 32	2.7	2.7	2.7	2.7	2.7	2.7	2.7

MODE	IC601						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 33	2.8	2.8	2.8	2.8	2.8	2.8	2.8
PIN 34	0	0	0	0	0	0	0
PIN 35	2.4	3.0	3.0	2.4	2.4	3.1	3.1
PIN 36	2.5	2.6	2.6	2.5	2.5	2.5	2.5
PIN 37	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 38	4.5	4.5	4.5	4.5	4.5	4.5	4.5
PIN 39	0	2.9	2.9	0	0	2.9	2.9
PIN 40	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 41	3.0	2.5	2.5	3.0	3.0	2.5	2.5
PIN 42	—	2.3	2.3	—	—	2.3	2.3
PIN 43	5.1	2.9	2.9	5.1	5.1	2.8	2.8
PIN 44	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 45	0.5	0.7	0.7	0.5	0.5	0.6	0.6
PIN 46	0	0	0	0	0	0	0
PIN 47	0.7	0.7	0.7	0.7	0.7	0.7	0.7
PIN 48	0.3	0.3	0.3	0.3	0.3	0.3	0.3
PIN 49	0	0	0	2.5	0	2.5	0
PIN 50	2.7	2.7	2.7	2.6	2.6	2.6	2.6
PIN 51	4.5	4.5	4.5	4.4	4.4	4.4	4.4
PIN 52	3.8	0.7	0.7	3.7	3.7	0.6	0.6
PIN 53	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 54	0	2.3	0	0	0	0	0
PIN 55	0	0	0	0	0	0	0
PIN 56	0	0	0	0	0	0	0
PIN 57	2.4	2.4	2.4	2.4	2.4	2.4	2.4
PIN 58	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 59	3.5	3.5	3.5	3.5	3.5	3.5	3.5
PIN 60	3.5	3.5	3.4	3.4	3.4	3.4	3.4
PIN 61	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PIN 62	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PIN 63	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 64	0	0	0	0	0	0	0

MODE	IC602						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	1.8	5.9	5.9	7.1	7.1	12.0	12.3
PIN 2	20.6	20.6	20.6	20.6	20.6	20.6	20.6
PIN 3	3.4	3.4	3.4	3.3	3.3	3.4	3.4
PIN 4	1.6	5.8	5.8	7.0	7.0	11.9	12.3
PIN 5	0.3	5.8	5.8	7.0	7.0	11.9	12.3
PIN 6	0	0	0	0	0	0	0

MODE	IC602						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 7	0	3.9	3.9	0	3.9	0	3.9
PIN 8	0	0	0	3.9	0	3.9	0
PIN 9	0	4.4	4.4	0.7	5.6	0.7	10.9
PIN 10	1.8	5.9	5.9	7.1	7.1	12.0	12.3
PIN 11	0	0	0	0	0	0	0
PIN 12	0	0.7	0.7	5.6	0.7	10.6	0.7

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### SERVO SYSTEM CONTROL VOLTAGE CHARTS (Continued)

MODE	IC603						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	2.8	2.8	2.8	2.8	2.8	2.8	2.8
PIN 2	2.8	2.8	2.8	2.8	2.8	2.8	2.8
PIN 3	2.8	2.8	2.8	2.8	2.8	2.8	2.8
PIN 4	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 5	1.4	2.8	2.8	1.4	1.4	2.8	2.8
PIN 6	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 7	2.8	0	0	2.8	2.8	3.6	3.6
PIN 8	1.0	1.5	1.5	1.0	1.0	3.6	3.6
PIN 9	2.2	2.2	2.2	2.2	2.2	2.2	2.2
PIN 10	0	2.4	2.4	0	0	0	0
PIN 11	20.6	20.6	20.6	20.6	20.6	20.6	20.6
PIN 12	10.6	8.7	8.7	10.6	10.6	18.2	18.2

MODE	IC603						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 13	0	0	0	0	0	0	0
PIN 14	10.5	4.9	4.9	10.5	10.5	13.7	13.5
PIN 15	10.5	4.8	4.8	10.5	10.5	13.7	13.5
PIN 16	10.5	4.8	4.8	10.5	10.5	13.7	13.5
PIN 17	10.5	8.4	8.4	10.5	10.5	18.2	18.2
PIN 18	2.2	2.2	2.2	2.2	2.2	2.2	2.2
PIN 19	2.1	2.1	2.1	2.1	2.1	2.1	2.1
PIN 20	2.1	2.1	2.1	2.1	2.1	2.1	2.1
PIN 21	2.1	2.1	2.1	2.1	2.1	2.1	2.1
PIN 22	2.1	2.1	2.1	2.1	2.1	2.1	2.1
PIN 23	2.1	2.1	2.1	2.1	2.1	2.1	2.1
PIN 24	2.1	2.1	2.1	2.1	2.1	2.1	2.1

MODE	IC604						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	20.6	20.6	20.6	20.6	20.6	20.6	20.6
PIN 2	0	0	0	0	0	0	0
PIN 3	4.7	4.7	4.7	4.7	4.7	4.7	4.7
PIN 4	7.7	7.7	7.7	7.7	7.7	7.7	7.7
PIN 5	0.3	6.1	6.1	7.4	7.4	12.2	12.7
PIN 6	0	3.0	3.0	0	0	3.5	3.5
PIN 7	2.5	3.0	3.0	3.0	3.0	3.3	3.3

MODE	IC604						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 8	0	4.9	4.9	0	4.9	0	4.9
PIN 9	0	0	0	0	4.9	4.9	0
PIN 10	0	0	0	4.9	0	0	0
PIN 11	0	0	0	3.9	0	3.9	0
PIN 12	0	3.9	3.9	0	3.9	0	3.9
PIN 13	0	0	0	0	0	0	0
PIN 14	0	0	0	0	0	0	0

MODE	IC605						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	0	0	0	0	0	0	0
PIN 3	-	2.3	2.3	-	-	2.3	2.3
PIN 4	0.5	0.7	0.7	0.5	0.5	0.6	0.6
PIN 5	0	0	0	0	0	1.9	1.9
PIN 6	0	0	0	0	0	0	0
PIN 7	4.6	4.6	4.6	4.6	4.6	4.6	4.6
PIN 8	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 9	0	0	0	0	0	0	0
PIN 10	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 11	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 12	0	0	0	0	0	0	0
PIN 13	0	0	0	0	0	0	0
PIN 14	0	0	0	0	0	0	0
PIN 15	0	0	0	0	0	0	0
PIN 16	0	0	0	0	0	0	0

MODE	IC605						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 17	14.1	14.1	14.1	14.1	14.1	14.1	14.1
PIN 18	1.3	1.3	1.3	1.3	1.3	1.3	1.3
PIN 19	3.5	3.5	3.5	3.5	3.5	3.5	3.5
PIN 20	4.7	4.7	4.7	4.7	4.7	4.7	4.7
PIN 21	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 22	0	0	0	0	0	0	0
PIN 23	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 24	0	0	0	0	0	0	0
PIN 25	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 26	5.3	5.3	5.3	5.3	5.3	5.3	5.3
PIN 27	2.7	2.7	2.8	2.8	2.8	2.8	2.8
PIN 28	0	2.6	2.6	2.6	2.6	2.6	2.6
PIN 29	2.2	2.2	2.2	2.2	2.2	2.2	2.2
PIN 30	5.3	5.3	5.3	5.3	5.3	4.7	4.7
PIN 31	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 32	0	0	0	0	0	0	0

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### SERVO SYSTEM CONTROL VOLTAGE CHARTS (Continued)

MODE	IC606						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 3	5.1	2.9	2.9	5.1	5.1	2.8	2.8
PIN 4	2.7	2.6	2.6	2.6	2.6	2.5	2.5
PIN 5	3.0	2.5	2.5	3.0	3.0	2.5	2.5
PIN 6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 7	0	2.9	2.9	0	0	2.9	2.9
PIN 8	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 9	5.3	5.3	5.3	5.3	5.3	5.3	5.3

MODE	IC607						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 2	0	0	0	0	0	0	0
PIN 3	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 4	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 5	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 6	0	3.0	3.0	0	0	3.5	3.5
PIN 7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 8	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 9	3.3	2.7	2.6	3.3	3.3	2.7	2.7
PIN 10	5.1	2.6	2.6	5.1	5.1	3.0	3.0
PIN 11	2.6	2.8	2.9	2.6	2.6	2.7	2.7

MODE	IC901						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	0	0	0	0	0	0	0
PIN 3	0	0	0	0	0	0	0
PIN 4	0	0	4.9	0	0	4.9	4.9
PIN 5	0	4.9	0	0	0	0	0
PIN 6	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 7	0	0	0	0	0	0	0
PIN 8	0	0	0	0	0	0	0
PIN 9	0	0	0	0	0	0	0
PIN 10	0	4.9	4.9	0	4.9	0	4.9
PIN 11	0	0	0	0	4.9	4.9	0
PIN 12	0	0	0	4.9	0	0	0
PIN 13	0	0	0	4.9	0	4.9	0
PIN 14	0	0	0	0	0	0	0
PIN 15	0	0	0	0	0	0	0
PIN 16	-	-	-	-	-	-	-
PIN 17	0	0	0	0	0	0	0
PIN 18	0	0	0	0	0	0	0
PIN 19	0	0	0	0	0	0	0
PIN 20	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 21	5.3	4.8	4.8	4.9	4.9	4.9	4.9
PIN 22	5.3	5.3	5.3	5.3	5.3	4.7	4.7
PIN 23	-	2.3	2.3	-	-	2.3	2.3
PIN 24	0	0	0	0	0	0	0
PIN 25	0	0	0	0	0	0	0
PIN 26	0	0	0	0	0	0	0
PIN 27	0	0	0	0	0	0	0
PIN 28	0	0	0	0	0	0	0
PIN 29	0	1.3	1.3	1.3	1.3	1.3	1.3
PIN 30	0	0	0	0	0	4.9	4.9
PIN 31	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 32	4.9	4.9	4.9	4.9	4.9	4.9	4.9

MODE	IC901						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 33	0	2.6	2.6	2.6	2.6	2.6	2.6
PIN 34	0	0	0	0	0	0	0
PIN 35	0	0	0	0	0	0	0
PIN 36	-	-	-	-	-	-	-
PIN 37	-	-	-	-	-	-	-
PIN 38	-	-	-	-	-	-	-
PIN 39	-	-	-	-	-	-	-
PIN 40	3.2	0	0	3.3	3.3	0	0
PIN 41	3.7	0.7	0.7	3.8	3.8	0.7	0.7
PIN 42	0	0	0	0	0	4.8	4.8
PIN 43	0	0	0	0	0	0	0
PIN 44	0	0	0	0	0	0	0
PIN 45	0	4.9	0	0	0	0	0
PIN 46	0	4.9	4.9	0	0	5.0	5.0
PIN 47	4.9	0	0	0	0	5.0	0
PIN 48	4.9	0	0	5.0	5.0	0	0
PIN 49	0	0	0	0	0	0	0
PIN 50	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 51	2.2	2.2	2.2	2.2	2.2	2.2	2.2
PIN 52	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PIN 53	0	0	0	0	0	0	0
PIN 54	0	0	0	0	0	0	0
PIN 55	0	0	0	0	0	0	0
PIN 56	0	0	0	0	0	0	0
PIN 57	0	0	0	0	0	0	0
PIN 58	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 59	0	0	0	0	0	4.9	4.9
PIN 60	0	0	0	0	0	0	0
PIN 61	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 62	0	0	4.9	0	0	4.9	4.9
PIN 63	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 64	0	0	0	0	0	0	0



## 2-C7

### SERVO SYSTEM CONTROL VOLTAGE CHARTS (Continued)

MODE	IC902						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	0.6	0.6	0.6	0.6	0.6	0.6	0.6
PIN 3	0.6	0.6	0.6	0.6	0.6	0.6	0.6
PIN 4	0	0	0	0	0	0	0
PIN 5	0	0	0	0	0	0	0

MODE	IC902						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 6	0	0	0	0	0	0	0
PIN 7	12.1	12.1	12.1	12.1	12.1	12.1	12.1
PIN 8	12.1	12.1	12.1	12.1	12.1	12.1	12.1
PIN 9	12.1	12.1	12.1	12.1	12.1	12.1	12.1
PIN 10	0.6	0.6	0.6	0.6	0.6	0.6	0.6

MODE	STOP			REC			PLAY			REW			F. FWD			REV S.			FWD S.			MODE
Tr No.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	Tr No.
Q 604	0	0	0	0	4.9	0	0	4.9	0	0	0	0	0	4.9	0	0	0	0	0	4.9	0	Q 604
Q 610	0	0	4.9	0	0	4.9	0	0	4.9	0	0	4.9	0	0	4.9	0	0	4.9	0	0	4.9	Q 610
Q 611	0	4.5	0	0	4.5	0	0	4.5	0	0	4.4	0	0	4.5	0	0	4.4	0	0	4.4	0	Q 611
Q 612	4.5	4.5	0.6	4.5	4.5	0.6	4.5	4.5	0.6	4.4	4.4	0	4.5	4.5	0	4.4	4.4	0.6	4.4	4.4	0.6	Q 612
Q 613	0	0	2.9	0	0.6	0	0	0.6	0	0	0	2.8	0	0	2.8	0	1.5	0	0	1.5	0	Q 613
Q 614	2.7	2.7	0	2.7	2.7	0	2.7	2.7	0	2.7	2.7	0	2.7	2.7	0	2.7	2.7	0	2.7	2.7	0	Q 614
Q 618	0	4.5	0	0	4.5	0	0	4.5	0	0	4.5	0	0	4.5	0	0	0	4.9	0	0	4.9	Q 618
Q 619	0	0	4.5	0	0	4.5	0	0	4.5	0	0	4.5	0	0	4.5	0	0	0	0	0	0	Q 619
Q 622	0	0	0	0	0	0	0	2.9	0	0	0	0	0	0	0	0	0	4.3	0	0	4.3	Q 622
Q 623	0	0	0	0	2.9	0	0	2.9	0	0	0	0	0	0	0	0	2.9	0	0	2.9	0	Q 623
Q 921	0	0	0	0	0	0	0	0.7	0	0	0	0	0	0	0	0	0.7	0	0	0.7	0	Q 921

### PRE-AMP HEAD SW VOLTAGE CHARTS

MODE	IC1P						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	2.7	0	0	2.7	2.7
PIN 2	0	0	0.7	0	0	0.7	0.7
PIN 3	0	0	2.7	0	0	2.7	2.7
PIN 4	0	0	0.7	0	0	0.7	0.7
PIN 5	0	0	0	0	0	0	0
PIN 6	0	0	0.7	0	0	0.7	0.7
PIN 7	0	0	2.7	0	0	2.7	2.7
PIN 8	0	0	2.9	0	0	2.9	2.9
PIN 9	0	0	1.0	0	0	1.0	1.0

MODE	IC1P						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 10	0	0	2.0	0	0	2.0	2.0
PIN 11	0	0	2.0	0	0	2.0	2.0
PIN 12	0	0	0	0	0	0	0
PIN 13	0	0	2.0	0	0	2.0	2.0
PIN 14	0	0	2.0	0	0	2.0	2.0
PIN 15	0	0	0	0	0	0	0
PIN 16	0	0	0	0	0	0	0
PIN 17	0	2.3	2.3	0	0	2.3	2.3
PIN 18	0	0	5.0	0	0	5.0	5.0

MODE	STOP			REC			PLAY			REW			F. FWD			REV S.			FWD S.			MODE
Tr No.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	Tr No.
Q 1P	0	0	0	0	4.3	0	0	0	0.7	0	1.0	0	0	0	0	0	0	0.7	0	0	0.7	Q 1P
Q 2P	0	0	0	0	0	0.7	0	0.7	0	0	0	0	0	0	0	0	0.7	0.3	0	0.7	0	Q 2P
Q 3P	0	0	0	0	0	0.7	0	0.7	0	0	0	0	0	0	0	0	0.7	0.3	0	0.7	0	Q 3P
Q 4P	1.5	5.3	2.1	1.5	5.3	2.1	1.5	5.3	2.1	1.5	5.3	2.1	1.5	5.3	2.1	1.5	5.3	2.1	1.5	5.3	2.1	Q 4P

## 2-C8

### DEMODULATOR VOLTAGE CHARTS

MODE	IC801F						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 3	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 4	11.7	11.7	11.7	11.7	11.7	11.7	11.7
PIN 5	10.3	10.3	10.3	10.3	10.3	10.3	10.3
PIN 6	5.7	5.7	5.7	5.7	5.7	5.7	5.7
PIN 7	9.9	9.9	9.9	9.9	9.9	9.9	9.9
PIN 8	5.5	5.5	5.5	5.5	5.5	5.5	5.5
PIN 9	4.0	4.0	4.0	4.0	4.0	4.0	4.0
PIN 10	4.6	4.6	4.6	4.6	4.6	4.6	4.6
PIN 11	6.7	6.7	6.7	6.7	6.7	6.7	6.7
PIN 12	11.7	11.7	11.7	11.7	11.7	11.7	11.7
PIN 13	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 14	0	0	0	0	0	0	0
PIN 15	4.6	4.6	4.6	4.6	4.6	4.6	4.6
PIN 16	4.6	4.6	4.6	4.6	4.6	4.6	4.6
PIN 17	6.3	6.3	6.3	6.3	6.3	6.3	6.3
PIN 18	6.1	6.1	6.1	6.1	6.1	6.1	6.1
PIN 19	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 20	0.9	0.9	0.9	0.9	0.9	0.9	0.9
PIN 21	0	0	0	0	0	0	0
PIN 22	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PIN 23	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PIN 24	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PIN 25	0	0	0	0	0	0	0
PIN 26	6.5	6.5	6.5	6.5	6.5	6.5	6.5
PIN 27	3.0	3.0	3.0	3.0	3.0	3.0	3.0
PIN 28	3.0	3.0	3.0	3.0	3.0	3.0	3.0

MODE	IC132F						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	0.4	0.4	0.4	0.4	0.4	0.4	0.4
PIN 3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
PIN 4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
PIN 5	5.3	5.3	5.3	5.3	5.3	5.3	5.3
PIN 6	0.4	0.4	0.4	0.4	0.4	0.4	0.4
PIN 7	0.5	0.5	0.5	0.5	0.5	0.5	0.5
PIN 8	0	0	0	0	0	0	0
PIN 9	1.2	1.2	1.2	1.2	1.2	1.2	1.2
PIN 10	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PIN 11	9.3	9.3	9.3	9.3	9.3	9.3	9.3
PIN 12	3.2	3.2	3.2	3.2	3.2	3.2	3.2
PIN 13	4.6	4.6	4.6	4.6	4.6	4.6	4.6
PIN 14	4.6	4.6	4.6	4.6	4.6	4.6	4.6
PIN 15	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PIN 16	0	0	0	0	0	0	0
PIN 17	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PIN 18	5.3	5.3	5.3	5.3	5.3	5.3	5.3
PIN 19	0	0	0	0	0	0	0
PIN 20	0	0	0	0	0	0	0

MODE	STOP			REC			PLAY			REW			F. FWD			REV S.			FWD S.			MODE
Tr No.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	Tr No.
Q 802F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Q 802F
Q 830F	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	Q 830F
Q 840F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Q 840F
Q 852F	4.1	10.6	4.7	4.1	10.6	4.7	4.1	10.6	4.7	4.1	10.6	4.7	4.1	10.6	4.7	4.1	10.6	4.7	4.1	10.6	4.7	Q 852F

### REGULATOR VOLTAGE CHARTS

MODE	IC851						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	5.3	5.3	5.3	5.3	5.3	5.3	5.3
PIN 2	4.7	4.7	4.7	4.7	4.7	4.7	4.7
PIN 3	10.5	8.4	8.4	10.5	10.5	18.2	18.2
PIN 4	12.1	12.1	12.1	12.1	12.1	12.1	12.1

MODE	IC851						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 5	12.1	12.1	12.1	12.1	12.1	12.1	12.1
PIN 6	13.4	13.4	13.4	13.4	13.4	13.4	13.4
PIN 7	20.6	20.6	20.6	20.6	20.6	20.6	20.6
PIN 8	0	0	0	0	0	0	0

## MAIN U-V PLL TUNING REAR JACK VOLTAGE CHARTS

MODE	IC501						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	11.8	11.8	11.8	11.8	11.8	11.8	11.8
PIN 2	7.8	7.8	7.8	7.8	7.8	7.8	7.8
PIN 3	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 4	7.2	7.2	7.2	7.2	7.2	7.2	7.2
PIN 5	0	0	0	0	0	0	0
PIN 6	0	0	0	0	0	0	0
PIN 7	7.8	7.8	7.8	7.8	7.8	7.8	7.8
PIN 8	0	0	0	0	0	0	0

MODE	IC802						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	5.6	5.6	5.6	5.6	5.6	5.6	5.6
PIN 2	0.6	0.6	0.6	0.6	0.6	0.6	0.6
PIN 3	12.1	12.1	12.1	12.1	12.1	12.1	12.1

MODE	IC801						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
PIN 2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
PIN 3	3.8	3.8	3.8	3.8	3.8	3.8	3.8
PIN 4	0	0	0	0	0	0	0
PIN 5	3.2	3.2	3.2	3.2	3.2	3.2	3.2
PIN 6	0	0	0	0	0	0	0
PIN 7	3.9	3.9	3.9	3.9	3.9	3.9	3.9
PIN 8	4.2	4.2	4.2	4.2	4.2	4.2	4.2
PIN 9	6.8	6.8	6.8	6.8	6.8	6.8	6.8
PIN 10	1.9	1.9	1.9	1.9	1.9	1.9	1.9
PIN 11	3.4	3.4	3.4	3.4	3.4	3.4	3.4
PIN 12	33.0	33.0	33.0	33.0	33.0	33.0	33.0
PIN 13	13.7	13.7	13.7	13.7	13.7	13.7	13.7
PIN 14	12.1	12.1	12.1	12.1	12.1	12.1	12.1
PIN 15	0	0	0	0	0	0	0
PIN 16	0	0	0	0	0	0	0
PIN 17	0	0	0	0	0	0	0
PIN 18	12.0	12.0	12.0	12.0	12.0	12.0	12.0

MODE	IC803						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 2	4.4	4.4	4.4	4.4	4.4	4.4	4.4
PIN 3	6.6	6.6	6.6	6.6	6.6	6.6	6.6
PIN 4	0	0	0	0	0	0	0
PIN 5	1.0	1.0	1.0	1.0	1.0	1.0	1.0
PIN 6	1.0	1.0	1.0	1.0	1.0	1.0	1.0
PIN 7	0	0	0	0	0	0	0
PIN 8	12.1	12.1	12.1	12.1	12.1	12.1	12.1

MODE	STOP			REC			PLAY			REW			F. FWD			REV S.			FWD S.			MODE
Tr No.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	Tr No.
Q 801	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	Q 801
Q 802	-28.0	-38.2	-28.6	-28.0	-38.2	-28.6	-28.0	-38.2	-28.6	-28.0	-38.2	-28.6	-28.0	-38.2	-28.6	-28.0	-38.2	-28.6	-28.0	-38.2	-28.6	Q 802
Q 803	6.1	12.1	6.7	6.1	12.1	6.7	6.1	12.1	6.7	6.1	12.1	6.7	6.1	12.1	6.7	6.1	12.1	6.7	6.1	12.1	6.7	Q 803

MODE	STOP			REC			PLAY			REW			F. FWD			REV S.			FWD S.			MODE
Tr No.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	Tr No.
Q 501	5.3	5.2	4.6	5.3	5.2	4.6	5.3	5.2	4.6	5.3	5.1	4.6	5.3	5.1	4.6	5.3	5.1	4.6	5.3	5.1	4.6	Q 501
Q 502	0.8	6.5	1.4	0.8	6.5	1.4	0.8	6.5	1.4	0.8	6.5	1.4	0.8	6.5	1.4	0.8	6.5	1.4	0.8	6.5	1.4	Q 502
Q 503	3.9	0	3.2	3.9	0	3.2	4.0	0	3.3	3.9	0	3.2	3.9	0	3.2	4.0	0	3.3	4.0	0	3.3	Q 503
Q 505	4.9	12.1	5.6	4.9	12.1	5.6	4.9	12.1	5.6	4.9	12.1	5.6	4.9	12.1	5.6	4.9	12.1	5.6	4.9	12.1	5.6	Q 505
Q 507	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Q 507
Q 508	0	11.9	0	0	11.9	0	0	11.9	0	0	11.9	0	0	11.9	0	0	11.9	0	0	11.9	0	Q 508
Q 509	11.9	0.3	11.9	11.0	10.8	10.3	11.9	0	11.9	11.9	0.3	11.9	11.9	0.3	11.9	11.9	0.3	11.9	11.9	0.3	11.9	Q 509



## 2-D2

### TIMER INPUT KEY FUNCTION SW VOLTAGE CHARTS

MODE	IC751						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 2	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 3	0	0	0	0	0	0	0
PIN 4	-	-	-	-	-	-	-
PIN 5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
PIN 6	-	-	-	-	-	-	-
PIN 7	-	-	-	-	-	-	-
PIN 8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
PIN 9	1.8	1.8	1.8	1.8	1.8	1.8	1.8
PIN 10	0.5	0.5	0.5	0.5	0.5	0.5	0.5
PIN 11	0.4	0.4	0.4	0.4	0.4	0.4	0.4
PIN 12	3.6	3.6	3.6	3.6	3.6	3.6	3.6
PIN 13	0.4	3.6	3.6	3.5	3.5	3.5	3.5
PIN 14	0.4	0.4	0.4	0.4	0.4	0.4	0.4
PIN 15	0.4	0.4	0.4	0.4	0.4	0.4	0.4
PIN 16	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 17	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 18	0	0	0	0	0	0	0
PIN 19	0	0	0	0	0	0	0
PIN 20	0	0	0	0	0	0	0
PIN 21	-	-	-	-	-	-	-
PIN 22	-	-	-	-	-	-	-
PIN 23	-	-	-	-	-	-	-
PIN 24	5.3	5.3	5.3	5.3	5.3	5.3	5.3
PIN 25	3.4	3.4	3.4	3.4	3.4	3.4	3.4
PIN 26	0	0	0	0	0	0	0
PIN 27	4.8	4.8	4.8	4.8	4.8	4.8	4.8
PIN 28	2.1	2.1	2.1	2.1	2.1	2.1	2.1
PIN 29	1.6	1.6	1.6	1.6	1.6	1.6	1.6
PIN 30	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PIN 31	1.7	1.7	1.7	1.7	1.7	1.7	1.7
PIN 32	0	0	0	0	0	0	0
PIN 33	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PIN 34	0	0	0	0	0	0	0
PIN 35	0	0	0	0	0	0	0

MODE	IC751						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 36	0	0	0	0	0	0	0
PIN 37	0	0	0	0	0	0	0
PIN 38	-28.0	-28.0	-28.0	-28.0	-28.0	-28.0	-28.0
PIN 39	-27.7	-27.7	-27.7	-27.7	-27.7	-27.7	-27.7
PIN 40	-27.7	-27.7	-27.7	-27.7	-27.7	-27.7	-27.7
PIN 41	-27.7	-27.7	-27.7	-27.7	-27.7	-27.7	-27.7
PIN 42	-27.7	-27.7	-27.7	-27.7	-27.7	-27.7	-27.7
PIN 43	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 44	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
PIN 45	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
PIN 46	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
PIN 47	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
PIN 48	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0
PIN 49	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7
PIN 50	-	-	-	-	-	-	-
PIN 51	-	-	-	-	-	-	-
PIN 52	-	-	-	-	-	-	-
PIN 53	-	-	-	-	-	-	-
PIN 54	-	-	-	-	-	-	-
PIN 55	-	-	-	-	-	-	-
PIN 56	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
PIN 57	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
PIN 58	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
PIN 59	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
PIN 60	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
PIN 61	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
PIN 62	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
PIN 63	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
PIN 64	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0

MODE	IC752						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 2	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 3	0	0	0	0	0	0	0

## 2-D3

### TIMER INPUT KEY FUNCTION SW VOLTAGE CHARTS (Continued)

MODE	IC753						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	0	0	0	0	0	0	0
PIN 3	0	0	0	0	0	0	0
PIN 4	9.2	9.2	9.2	9.2	9.2	9.2	9.2
PIN 5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
PIN 6	10.5	10.5	10.5	10.5	10.5	10.5	10.5
PIN 7	10.5	10.5	10.5	10.5	10.5	10.5	10.5
PIN 8	10.5	10.5	10.5	10.5	10.5	10.5	10.5
PIN 9	10.5	10.5	10.5	10.5	10.5	10.5	10.5
PIN 10	9.1	8.1	8.9	9.0	9.0	9.0	9.0
PIN 11	10.5	10.5	10.5	10.5	10.5	10.5	10.5
PIN 12	0	0	0	0	0	0	0
PIN 13	0	0	0	0	0	0	0
PIN 14	0	0	0	0	0	0	0
PIN 15	11.9	11.9	11.9	11.9	11.9	11.9	11.9
PIN 16	.0	0	0	0	0	0	0

MODE	IC754						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	0	0	0	0	0	0	0
PIN 3	0	0	0	0	0	0	0
PIN 4	9.2	9.2	9.2	9.2	9.2	9.2	9.2
PIN 5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
PIN 6	10.5	10.5	10.5	10.5	10.5	10.5	10.5
PIN 7	10.5	10.5	10.5	10.5	10.5	10.5	10.5
PIN 8	10.5	10.5	10.5	10.5	10.5	10.5	10.5
PIN 9	10.5	10.5	10.5	10.5	10.5	10.5	10.5
PIN 10	9.1	8.1	8.9	9.0	9.0	9.0	9.0
PIN 11	10.5	10.5	10.5	10.5	10.5	10.5	10.5
PIN 12	0	0	0	0	0	0	0
PIN 13	0	0	0	0	0	0	0
PIN 14	0	0	0	0	0	0	0
PIN 15	11.9	11.9	11.9	11.9	11.9	11.9	11.9
PIN 16	0	0	0	0	0	0	0

MODE	STOP			REC			PLAY			REW			F. FWD			REV S.			FWD S.			MODE
Tr No.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	Tr No.
Q 752	0	3.4	0	0	3.4	0	0	3.4	0	0	3.4	0	0	3.4	0	0	3.4	0	0	3.4	0	Q 752

### COMB FILTER VOLTAGE CHARTS

MODE	IC50CF						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	-	-	-	-	-	-	-
PIN 2	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 4	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 5	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 6	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 7	0	0	0	0	0	0	0
PIN 8	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 9	0	0	0	0	0	0	0
PIN 10	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 11	-	-	-	-	-	-	-

MODE	IC50CF						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 12	-	-	-	-	-	-	-
PIN 13	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 14	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 15	0	0	5.1	0	0	5.1	5.1
PIN 16	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 17	5.2	5.2	5.2	5.2	5.2	5.2	5.2
PIN 18	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 19	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 20	4.4	4.4	3.6	4.4	4.4	3.6	3.6
PIN 21	2.2	2.2	2.2	2.2	2.2	2.2	2.2
PIN 22	-	-	-	-	-	-	-

MODE	STOP			REC			PLAY			REW			F. FWD			REV S.			FWD S.			MODE
Tr No.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	Tr No.
Q 50CF	0	2.3	0	0	2.3	0	0	2.3	0	0	2.3	0	0	2.3	0	0	2.3	0	0	2.3	0	Q 50CF
Q 50CF	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	Q 50CF
Q 52CF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Q 52CF
Q 53CF	2.3	5.2	2.9	2.3	5.2	2.9	2.3	5.2	2.9	2.3	5.2	2.9	2.3	5.2	2.9	2.3	5.2	2.9	2.3	5.2	2.9	Q 53CF
Q 54CF	1.6	5.2	2.3	1.6	5.2	2.3	1.6	5.2	2.3	1.6	5.2	2.3	1.6	5.2	2.3	1.6	5.2	2.3	1.6	5.2	2.3	Q 54CF
Q 55CF	0	4.6	0	0	4.6	0	0	0	5.1	0	4.6	0	0	4.6	0	0	0	5.1	0	0	5.1	Q 55CF
Q 55CF	0	0	4.6	0	0	4.6	0	0	0	0	4.6	0	0	4.6	0	0	0	0	0	0	0	Q 55CF

## 2-D4

### CHARACTER GENERATOR VOLTAGE CHARTS

MODE	IC51G						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 2	0	0	0	0	0	0	0
PIN 3	0	0	0	0	0	0	0
PIN 4	0	0	0	0	0	0	0
PIN 5	0	0	0	0	0	0	0
PIN 6	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 7	4.3	4.3	4.3	4.3	4.3	4.3	4.3
PIN 8	4.0	4.0	4.0	4.0	4.0	4.0	4.0
PIN 9	2.2	2.2	2.2	2.2	2.2	2.2	2.2
PIN 10	2.2	2.2	2.2	2.2	2.2	2.2	2.2
PIN 11	0	0	0	0	0	0	0
PIN 12	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 13	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 14	0	0	0	0	0	0	0
PIN 15	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 16	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 17	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 18	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 19	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 20	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 21	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 22	4.9	4.9	4.9	4.9	4.9	4.9	4.9

MODE	IC52G						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	0	0	0	0	0	0	0
PIN 3	2.4	2.4	2.4	2.4	2.4	2.4	2.4
PIN 4	2.9	2.9	2.9	2.9	2.9	2.9	2.9
PIN 5	2.9	2.9	2.9	2.9	2.9	2.9	2.9
PIN 6	2.9	2.9	2.9	2.9	2.9	2.9	2.9
PIN 7	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 8	3.0	3.0	3.0	3.0	3.0	3.0	3.0
PIN 9	4.1	4.1	4.1	4.1	4.1	4.1	4.1
PIN 10	0.6	0.6	0.6	0.6	0.6	0.6	0.6
PIN 11	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 12	0	0	0	0	0	0	0
PIN 13	0.6	0.6	0.6	0.6	0.6	0.6	0.6
PIN 14	4.4	4.4	4.4	4.4	4.4	4.4	4.4
PIN 15	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 16	0	0	0	0	0	0	0
PIN 17	3.0	3.0	3.0	3.0	3.0	3.0	3.0
PIN 18	0	0	0	0	0	0	0
PIN 19	3.8	3.8	3.8	3.8	3.8	3.8	3.8
PIN 20	0	0	0	0	0	0	0
PIN 21	3.4	3.4	3.4	3.4	3.4	3.4	3.4
PIN 22	0	0	0	0	0	0	0

MODE	IC53G						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	0	0	0	0	0	0	0
PIN 3	0	0	0	0	0	0	0
PIN 4	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 5	0	0	0	0	0	0	0
PIN 6	1.9	1.9	1.9	1.9	1.9	1.9	1.9
PIN 7	2.3	2.3	2.3	2.3	2.3	2.3	2.3
PIN 8	0	0	0	0	0	0	0

MODE	IC54G						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0.5	0.5	0.5	0.5	0.5	0.5	0.5
PIN 2	0.4	0.4	0.4	0.4	0.4	0.4	0.4
PIN 3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
PIN 4	0	0	0	0	0	0	0
PIN 5	0	0	0	0	0	0	0
PIN 6	4.2	4.2	4.2	4.2	4.2	4.2	4.2
PIN 7	0	0	0	0	0	0	0
PIN 8	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PIN 9	5.1	5.1	5.1	5.1	5.1	5.1	5.1

MODE	STOP			REC			PLAY			REW			F. FWD			REV S.			FWD S.			MODE
Tr No.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	Tr No.
Q 51G	2.0	5.1	2.6	2.0	5.1	2.6	2.0	5.1	2.6	2.0	5.1	2.6	2.0	5.1	2.6	2.0	5.1	2.6	2.0	5.1	2.6	Q 51G
Q 52G	2.6	0	2.0	2.6	0	2.0	2.6	0	2.0	2.6	0	2.0	2.6	0	2.0	2.6	0	2.0	2.6	0	2.0	Q 52G
Q 53G	0	3.0	0	0	3.0	0	0	3.0	0	0	3.0	0	0	3.0	0	0	3.0	0	0	3.0	0	Q 53G
Q 54G	0.4	2.6	1.1	0.4	2.6	1.1	0.4	2.6	1.1	0.4	2.6	1.1	0.4	2.6	1.1	0.4	2.6	1.1	0.4	2.6	1.1	Q 54G
Q 55G	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	Q 55G
Q 56G	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	Q 56G
Q 57G	1.9	5.1	2.6	1.9	5.1	2.6	1.9	5.1	2.6	1.9	5.1	2.6	1.9	5.1	2.6	1.9	5.1	2.6	1.9	5.1	2.6	Q 57G
Q 58G	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	Q 58G
Q 59G	0	0	0	0	0	0	0	0	0.7	0	0	0	0	0	0	0	0	0.7	0	0	0.7	Q 59G

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### AUDIO DOLBY NR VOLTAGE CHARTS

MODE	IC401L,R						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
PIN 2	0	0	0	0	0	0	0
PIN 3	0	0	0	0	0	0	0
PIN 4	4.4	4.4	0	4.4	4.4	0	0
PIN 5	5.0	5.0	4.9	5.0	5.0	4.9	4.9

MODE	IC403						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	11.9	11.9	11.9	11.9	11.9	11.9	11.9
PIN 3	11.9	11.9	11.9	11.9	11.9	11.9	11.9
PIN 4	11.9	11.9	11.9	11.9	11.9	11.9	11.9
PIN 5	0	0	0	0	0	0	0
PIN 6	0	0	0	0	0	0	0
PIN 7	0	0	0	0	0	0	0
PIN 8	0	0	0	0	0	0	0
PIN 9	0	0	0	0	0	0	0
PIN 10	0	0	0	0	0	0	0
PIN 11	0	0	0	0	0	0	0
PIN 12	0	0	0	0	0	0	0
PIN 13	0	0	0	0	0	0	0
PIN 14	0	0	0	0	0	0	0
PIN 15	0	0	0	0	0	0	0
PIN 16	0	0	0	0	0	0	0

MODE	IC402L,R						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
PIN 2	7.9	7.9	7.9	7.9	7.9	7.9	7.9
PIN 3	0	0	0.6	0	0	4.1	4.1
PIN 4	0.6	0.6	0.6	0.6	0.6	0.6	0.6
PIN 5	0	0	0	0	0	0	0
PIN 6	0	0	0	0	0	0	0
PIN 7	0	0	0	0	0	0	0
PIN 8	3.3	3.3	3.3	3.3	3.3	3.3	3.3
PIN 9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
PIN 10	0	0	0	0	0	0	0
PIN 11	0	0	0	0	0	0	0
PIN 12	0.6	0.6	0.6	0.6	0.6	0.6	0.6
PIN 13	3.4	3.4	3.4	3.4	3.4	3.4	3.4
PIN 14	-	-	0.4	-	-	0.4	0.4
PIN 15	1.5	1.5	1.5	1.5	1.5	1.5	1.5
PIN 16	0	0	0	0	0	0	0
PIN 17	0.8	4.7	4.5	0.8	0.8	4.5	4.5
PIN 18	3.6	3.6	3.5	3.6	3.6	3.5	3.5
PIN 19	4.6	4.6	4.6	4.6	4.6	4.6	4.6
PIN 20	-	-	-	-	-	4.3	4.3
PIN 21	0	0	4.5	0	0	4.5	4.5
PIN 22	11.9	11.9	11.9	11.9	11.9	11.9	11.9

MODE	IC431						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	5.6	5.6	5.6	5.6	5.6	5.6	5.6
PIN 3	1.1	1.1	1.1	1.1	1.1	1.1	1.1
PIN 4	5.5	5.5	5.5	5.5	5.5	5.5	5.5
PIN 5	2.1	2.1	2.1	2.1	2.1	2.1	2.1
PIN 6	5.9	5.9	5.7	5.9	5.9	5.7	5.7
PIN 7	5.9	5.9	5.7	5.9	5.9	5.7	5.7
PIN 8	5.7	5.7	5.7	5.7	5.7	5.7	5.7
PIN 9	0	0	0	0	0	0	0
PIN 10	0	0	0	0	0	0	0
PIN 11	5.4	5.4	5.6	5.4	5.4	5.6	5.6
PIN 12	5.4	5.4	5.6	5.4	5.4	5.6	5.6
PIN 13	0	0	0	0	0	0	0
PIN 14	0	0	0	0	0	0	0
PIN 15	5.7	5.7	5.7	5.7	5.7	5.7	5.7
PIN 16	5.9	5.9	5.7	5.9	5.9	5.7	5.7
PIN 17	5.9	5.9	5.7	5.9	5.9	5.7	5.7
PIN 18	5.1	5.1	1.0	5.1	5.1	1.0	1.0
PIN 19	5.6	5.6	5.6	5.6	5.6	5.6	5.6
PIN 20	5.7	5.7	5.7	5.7	5.7	5.7	5.7
PIN 21	5.7	5.7	5.7	5.7	5.7	5.7	5.7
PIN 22	11.4	11.4	11.4	11.4	11.4	11.4	11.4

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### AUDIO DOLBY NR VOLTAGE CHARTS (Continued)

MODE	STOP			REC			PLAY			REW			F. FWD			REV S.			FWD S.			MODE
Tr No.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	Tr No.
Q 401L,R	0	0	0.7	0	0	0.7	0	0	0	0	0	0.7	0	0	0.7	0	0	0	0	0	0	Q 401L,R
Q 404L,R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Q 404L,R
Q 405L,R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Q 405L,R
Q 406	11.9	11.9	0	11.9	11.9	0	11.9	11.9	0	11.9	11.9	0	11.9	11.9	0	11.9	11.9	0	11.9	11.9	0	Q 406
Q 408	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	Q 408
Q 409	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	Q 409
Q 410	0	0	3.8	0	0	3.8	0	0	4.0	0	0	3.8	0	0	3.8	0	0	4.0	0	0	4.0	Q 410
Q 431	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	0	0	0	0	0.7	0	0	0.7	Q 431
Q 432	0	5.1	0	0	5.1	0	0	0	0.7	0	5.1	0	0	5.1	0	0	0	0.7	0	0	0.7	Q 432
Q 433L,R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Q 433L,R
Q 451	0	0.7	0	0	0.7	0	0	0	0.7	0	0.7	0	0	0.7	0	0	0	0.7	0	0	0.7	Q 451
Q 452	0	0	0.7	0	0	0.7	0	5.8	0	0	0	0.7	0	0	0.7	0	5.8	0	0	5.8	0	Q 452
Q 453	0	0	0	0	0	0	0	3.7	0	0	0	0	0	0	0	0	3.7	0	0	3.7	0	Q 453
Q 454	0	5.4	0	0	5.4	0	0	5.4	0	0	5.4	0	0	5.4	0	0	5.4	0	0	5.4	0	Q 454
Q 455	9.1	11.9	9.7	9.1	11.9	9.7	9.1	11.9	9.7	9.1	11.9	9.7	9.1	11.9	9.7	9.1	11.9	9.7	9.1	11.9	9.7	Q 455

### IR RECEIVER VOLTAGE CHART

MODE	IC1RX						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PIN 2	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PIN 3	1.6	1.6	1.6	1.6	1.6	1.6	1.6
PIN 4	0	0	0	0	0	0	0
PIN 5	1.6	1.6	1.6	1.6	1.6	1.6	1.6
PIN 6	1.0	1.0	1.0	1.0	1.0	1.0	1.0
PIN 7	5.3	5.3	5.3	5.3	5.3	5.3	5.3
PIN 8	5.3	5.3	5.3	5.3	5.3	5.3	5.3

## 2-D7

### AUDIO MPX VOLTAGE CHARTS

MODE	IC1S						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	4.7	4.7	4.7	4.7	4.7	4.7	4.7
PIN 2	0	0	0	0	0	0	0
PIN 3	1.7	1.7	1.7	1.7	1.7	1.7	1.7
PIN 4	1.7	1.7	1.7	1.7	1.7	1.7	1.7
PIN 5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
PIN 6	5.4	5.4	5.4	5.4	5.4	5.4	5.4
PIN 7	0	0	0	0	0	0	0
PIN 8	2.1	2.1	2.1	2.1	2.1	2.1	2.1
PIN 9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
PIN 10	0.7	0.7	0.7	0.7	0.7	0.7	0.7
PIN 11	3.5	3.5	3.5	3.5	3.5	3.5	3.5
PIN 12	0	0	0	0	0	0	0
PIN 13	5.8	5.8	5.8	5.8	5.8	5.8	5.8
PIN 14	5.4	5.4	5.4	5.4	5.4	5.4	5.4
PIN 15	0	0	0	0	0	0	0
PIN 16	5.4	5.4	5.4	5.4	5.4	5.4	5.4
PIN 17	0	0	0	0	0	0	0
PIN 18	0	0	3.7	0	0	3.7	3.7
PIN 19	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 20	0	0	5.8	0	0	5.8	5.8
PIN 21	0	0	0	0	0	0	0
PIN 22	3.9	3.9	3.9	3.9	3.9	3.9	3.9
PIN 23	3.9	3.9	3.9	3.9	3.9	3.9	3.9
PIN 24	3.9	3.9	3.9	3.9	3.9	3.9	3.9
PIN 25	3.5	3.5	3.5	3.5	3.5	3.5	3.5
PIN 26	5.3	5.3	5.3	5.3	5.3	5.3	5.3
PIN 27	4.6	4.6	4.6	4.6	4.6	4.6	4.6
PIN 28	5.2	5.2	5.2	5.2	5.2	5.2	5.2
PIN 29	3.7	3.7	3.7	3.7	3.7	3.7	3.7
PIN 30	8.3	8.3	8.3	8.3	8.3	8.3	8.3
PIN 31	8.3	8.3	8.3	8.3	8.3	8.3	8.3
PIN 32	3.0	3.0	3.0	3.0	3.0	3.0	3.0
PIN 33	0	0	0	0	0	0	0
PIN 34	3.0	3.1	3.0	3.0	3.0	3.0	3.0
PIN 35	9.5	9.5	9.5	9.5	9.5	9.5	9.5

MODE	IC1S						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 36	9.5	9.5	9.5	9.5	9.5	9.5	9.5
PIN 37	3.5	3.5	3.5	3.5	3.5	3.5	3.5
PIN 38	0	0	0	0	0	0	0
PIN 39	3.9	3.9	3.9	3.9	3.9	3.9	3.9
PIN 40	3.9	3.9	3.9	3.9	3.9	3.9	3.9
PIN 41	5.3	5.3	5.3	5.3	5.3	5.3	5.3
PIN 42	9.1	9.1	9.1	9.1	9.1	9.1	9.1

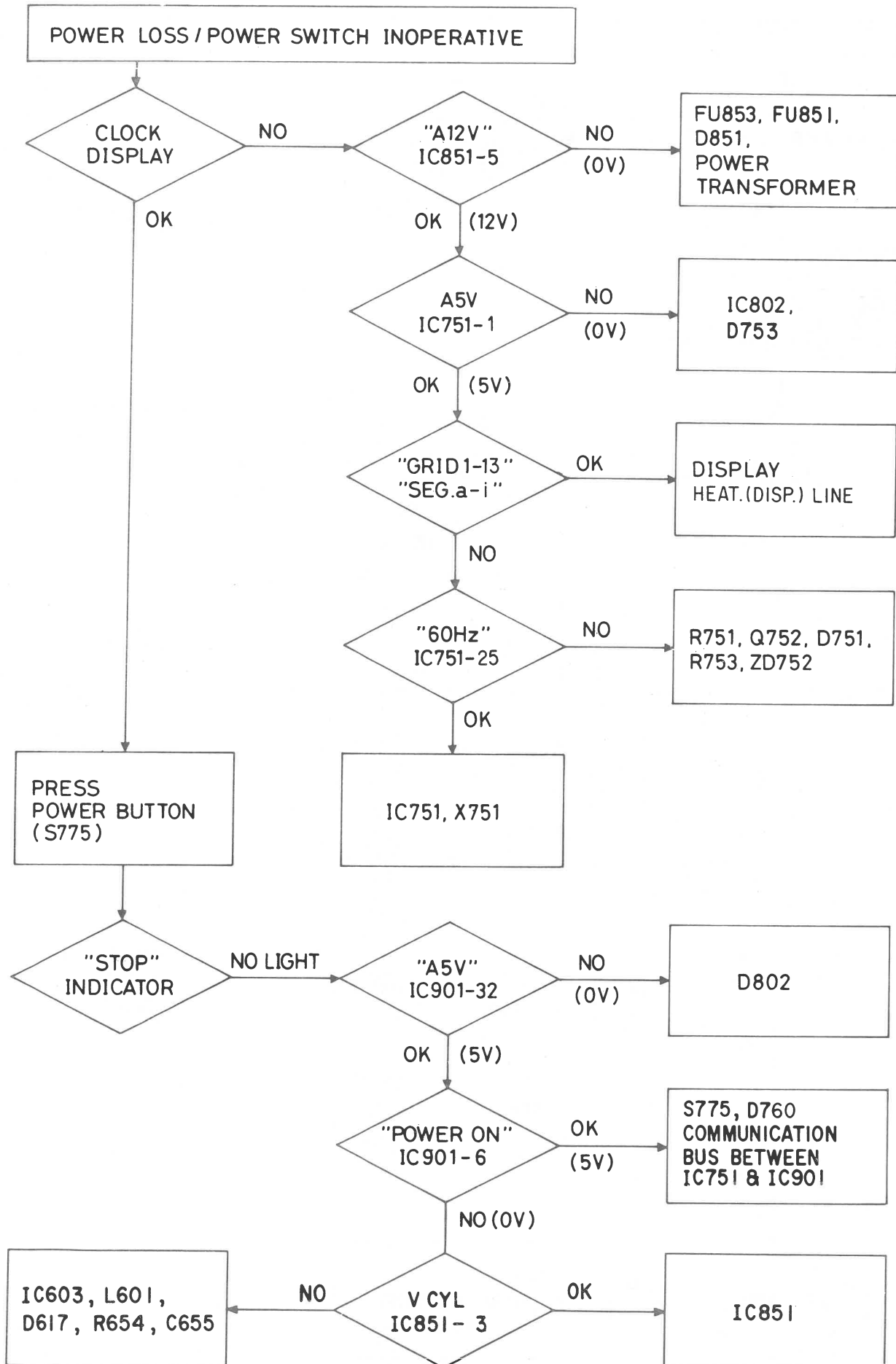
MODE	IC2S						
PIN NO.	STOP	REC	PLAY	REW	F. FWD	REV S.	FWD S.
PIN 1	1.7	1.7	1.7	1.7	1.7	1.7	1.7
PIN 2	5.8	5.8	5.8	5.8	5.8	5.8	5.8
PIN 3	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 4	1.3	1.3	1.3	1.3	1.3	1.3	1.3
PIN 5	1.7	1.7	1.7	1.7	1.7	1.7	1.7
PIN 6	5.5	5.5	5.5	5.5	5.5	5.5	5.5
PIN 7	6.0	6.0	6.0	6.0	6.0	6.0	6.0
PIN 8	0	0	0	0	0	0	0
PIN 9	9.1	9.1	9.1	9.1	9.1	9.1	9.1
PIN 10	6.0	6.0	6.0	6.0	6.0	6.0	6.0
PIN 11	6.0	6.0	6.0	6.0	6.0	6.0	6.0
PIN 12	6.0	6.0	6.0	6.0	6.0	6.0	6.0
PIN 13	6.0	6.0	6.0	6.0	6.0	6.0	6.0
PIN 14	6.1	6.1	6.1	6.1	6.1	6.1	6.1
PIN 15	6.0	6.0	6.0	6.0	6.0	6.0	6.0
PIN 16	5.7	5.7	5.7	5.7	5.7	5.7	5.7

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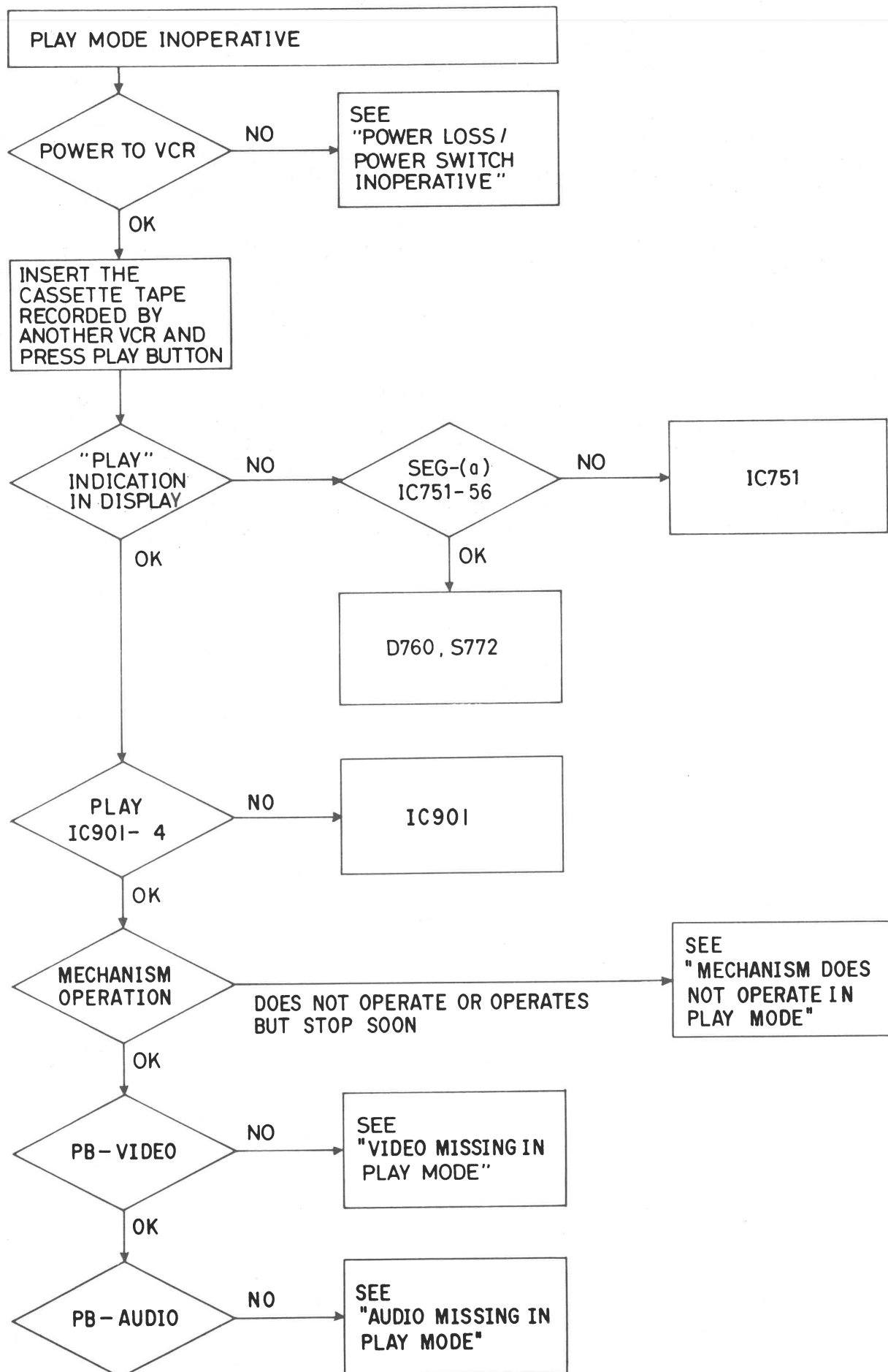
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### TROUBLESHOOTING GUIDES (Continued)



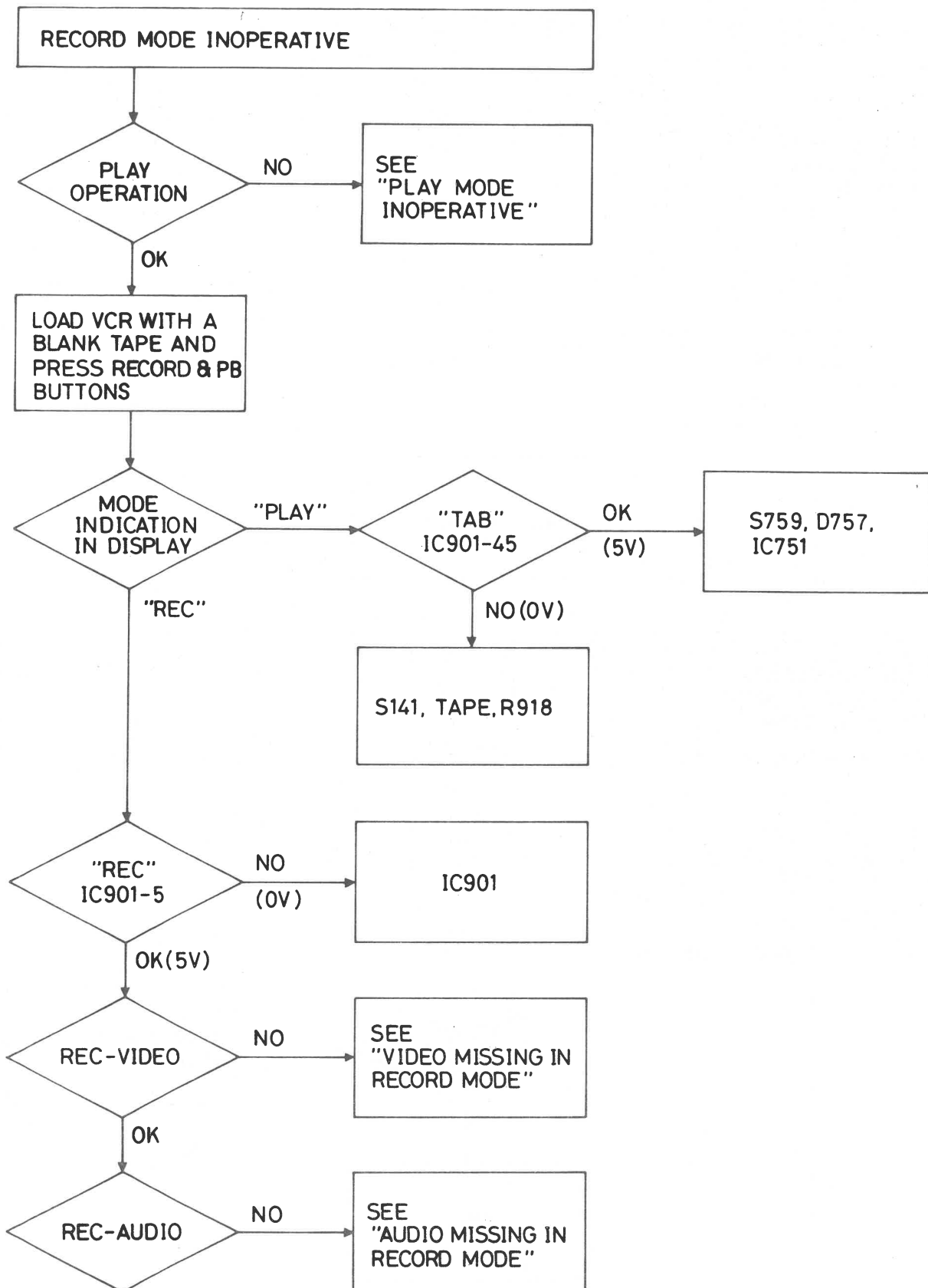


## TROUBLESHOOTING GUIDES (Continued)



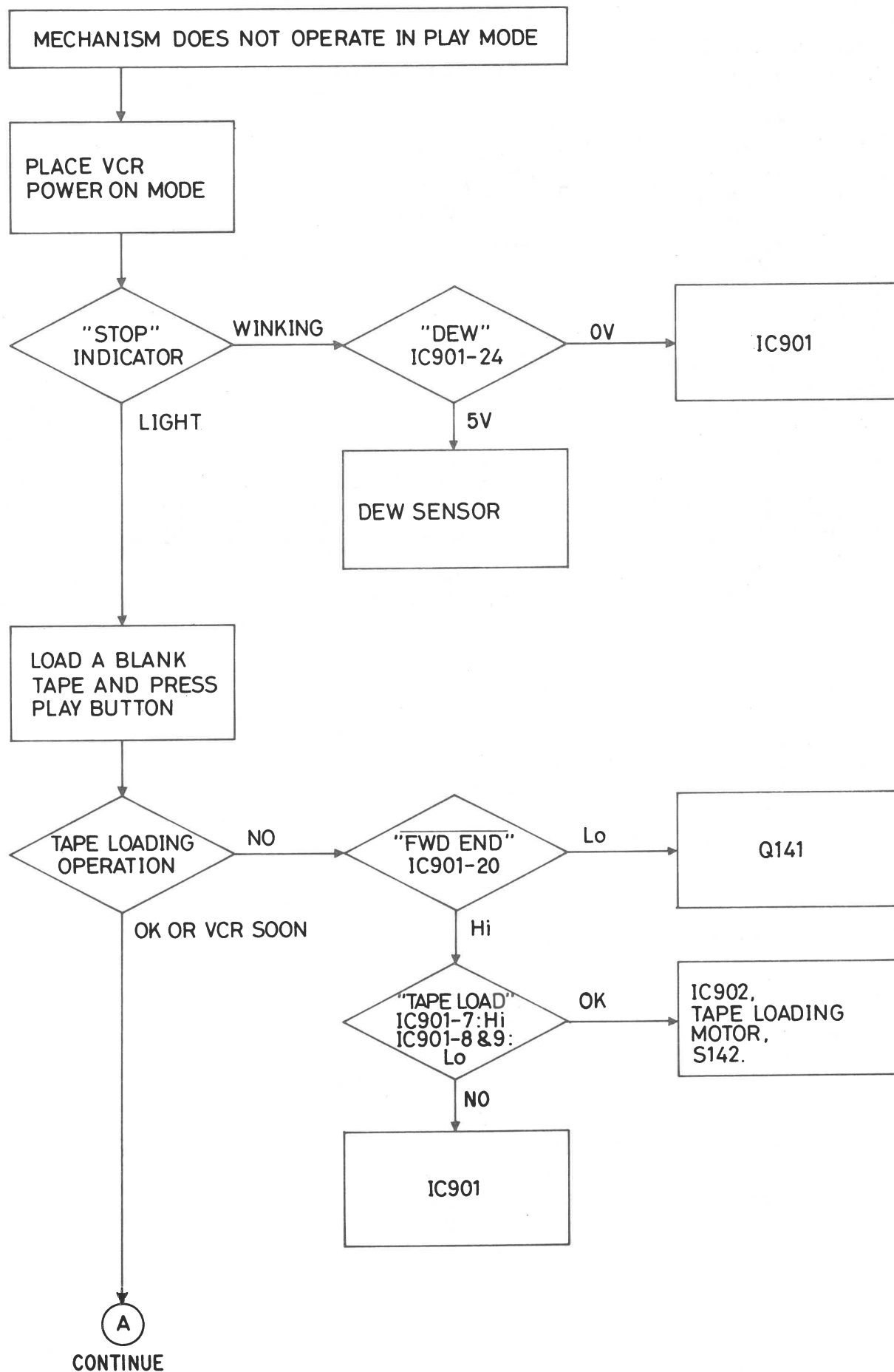
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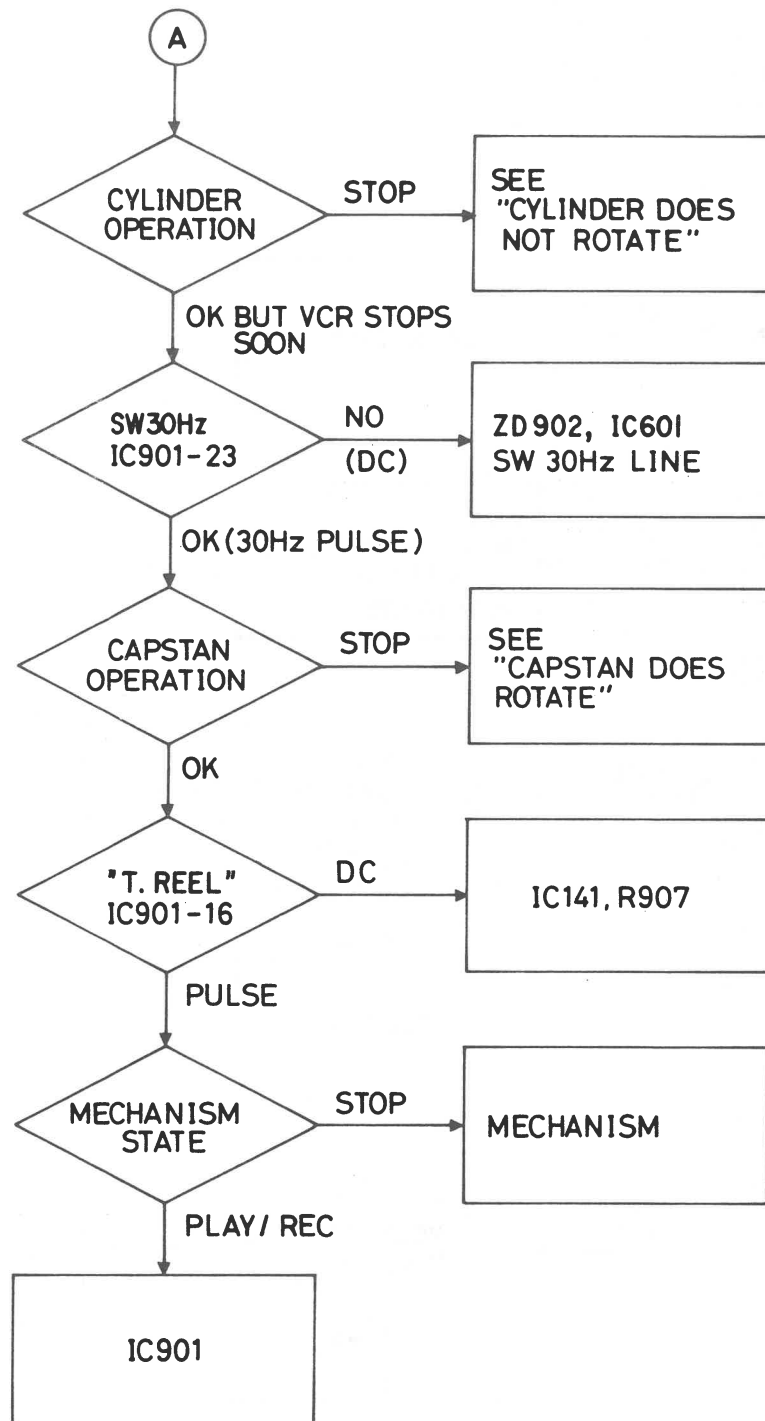
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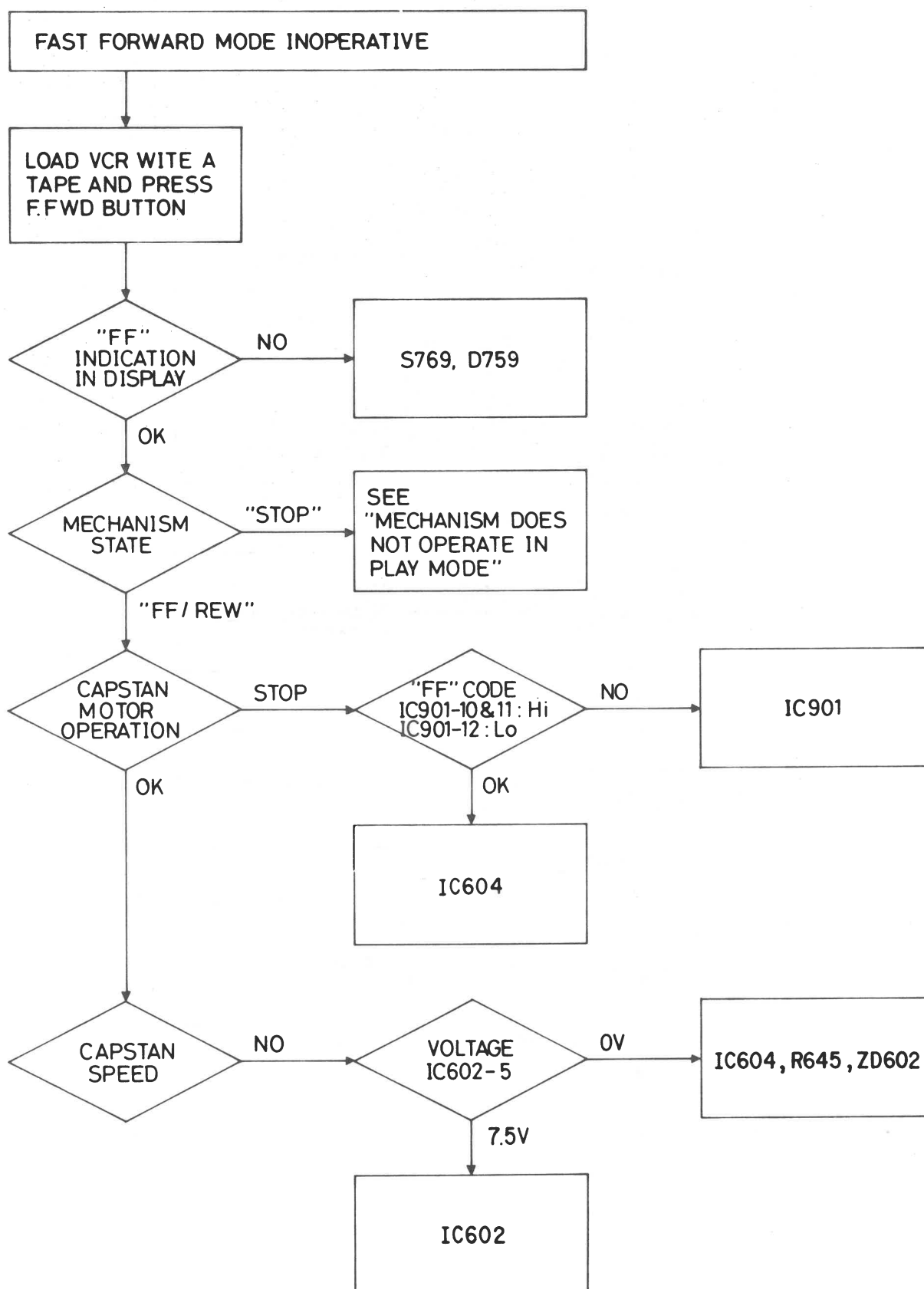
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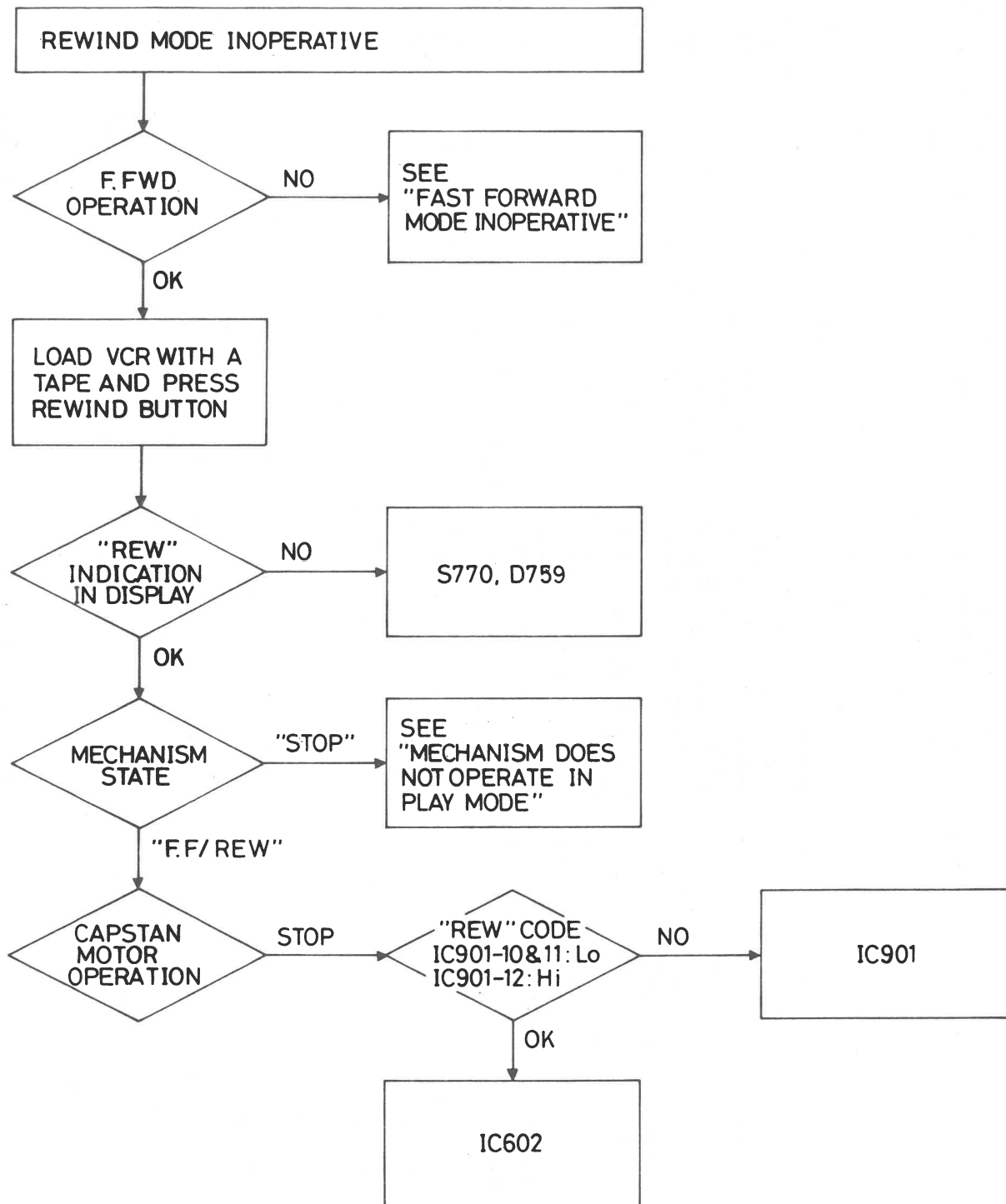


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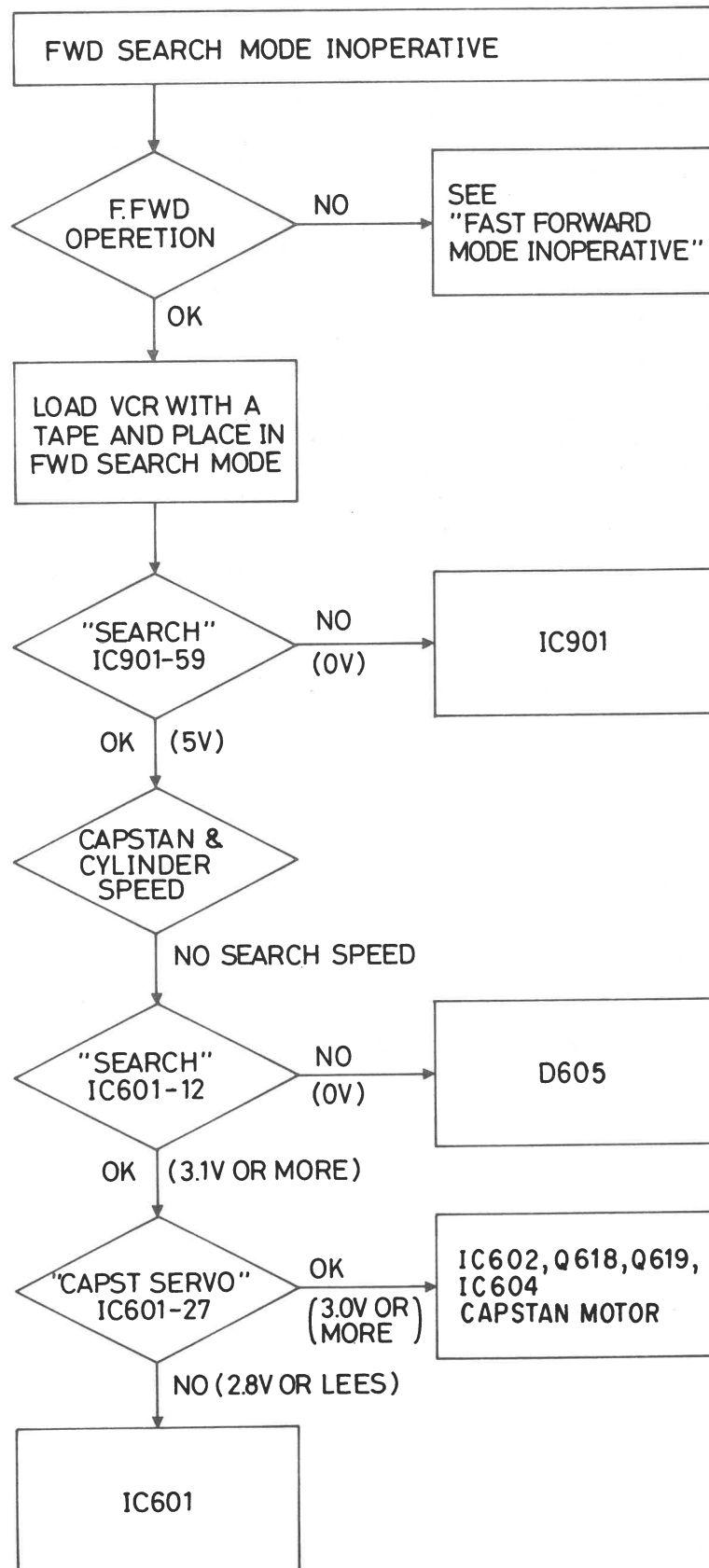
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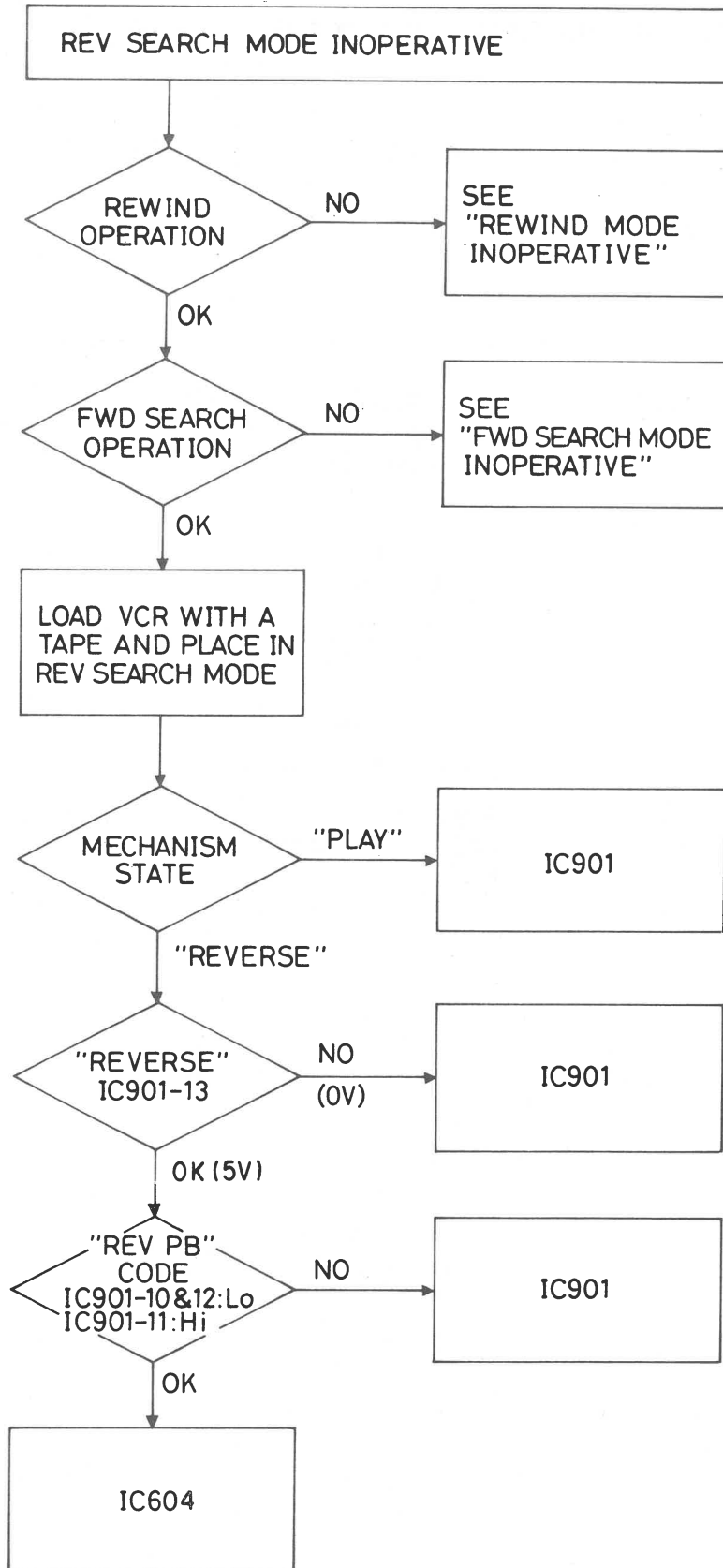
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## TROUBLESHOOTING GUIDES (Continued)

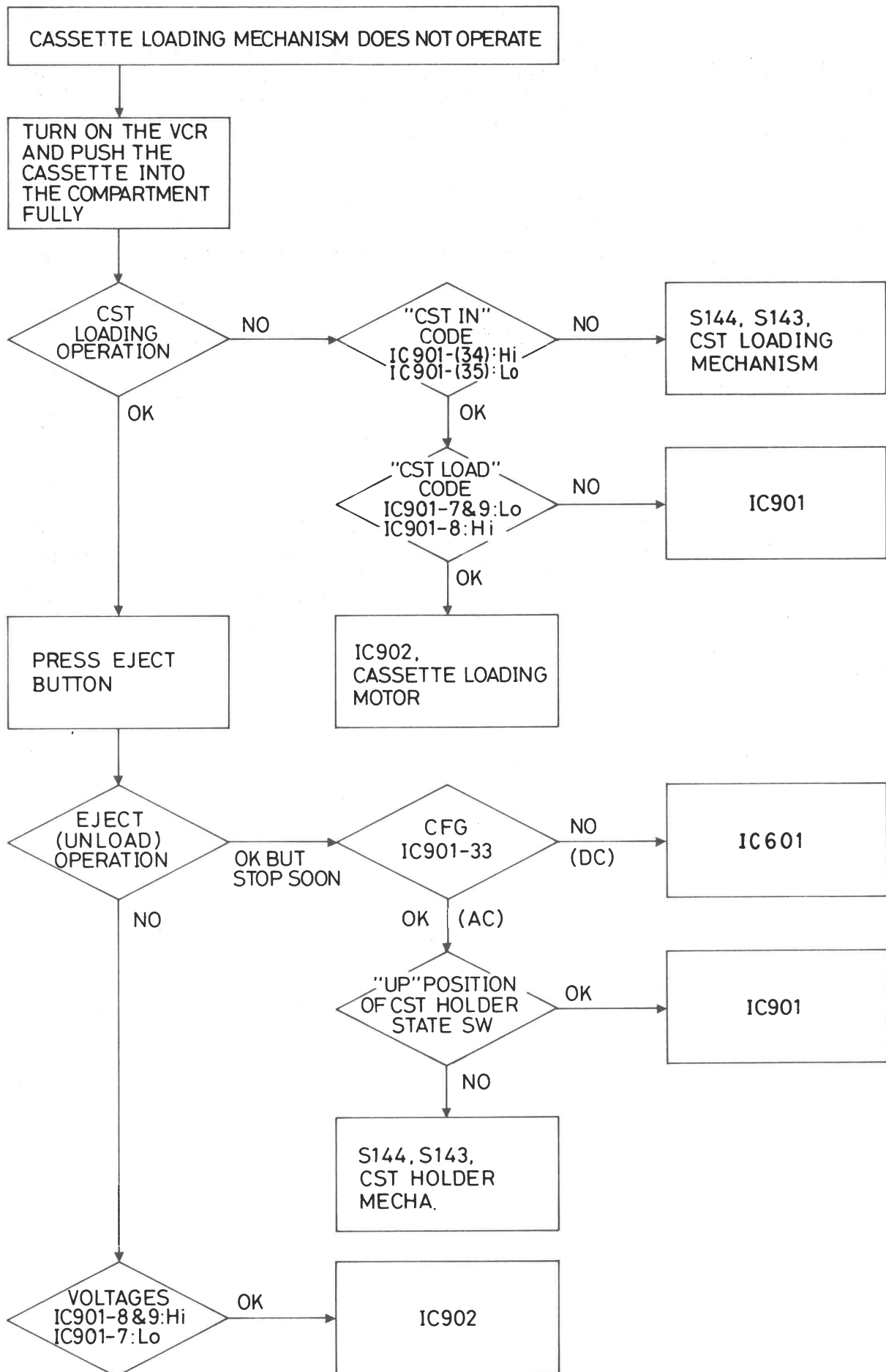


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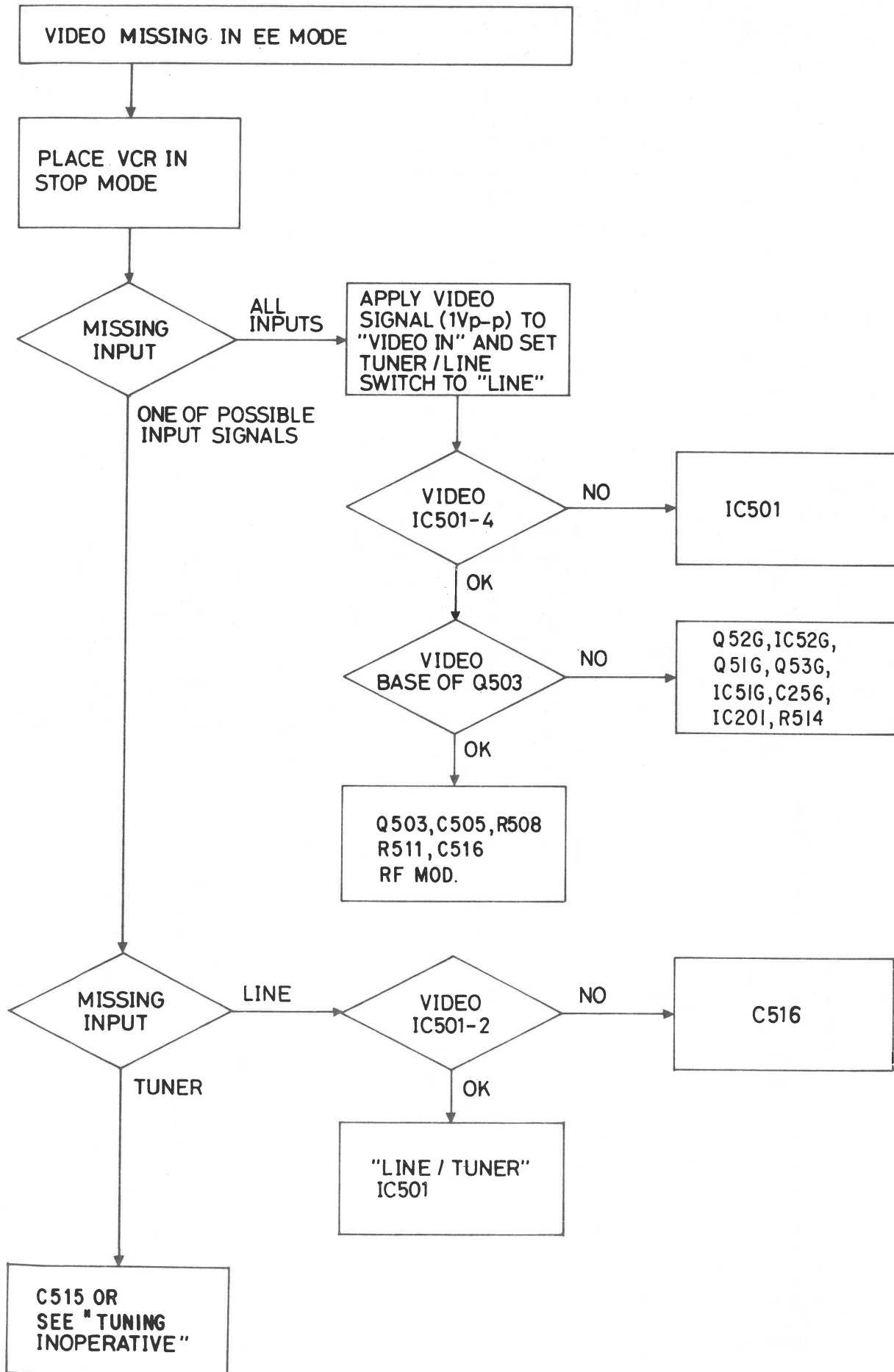




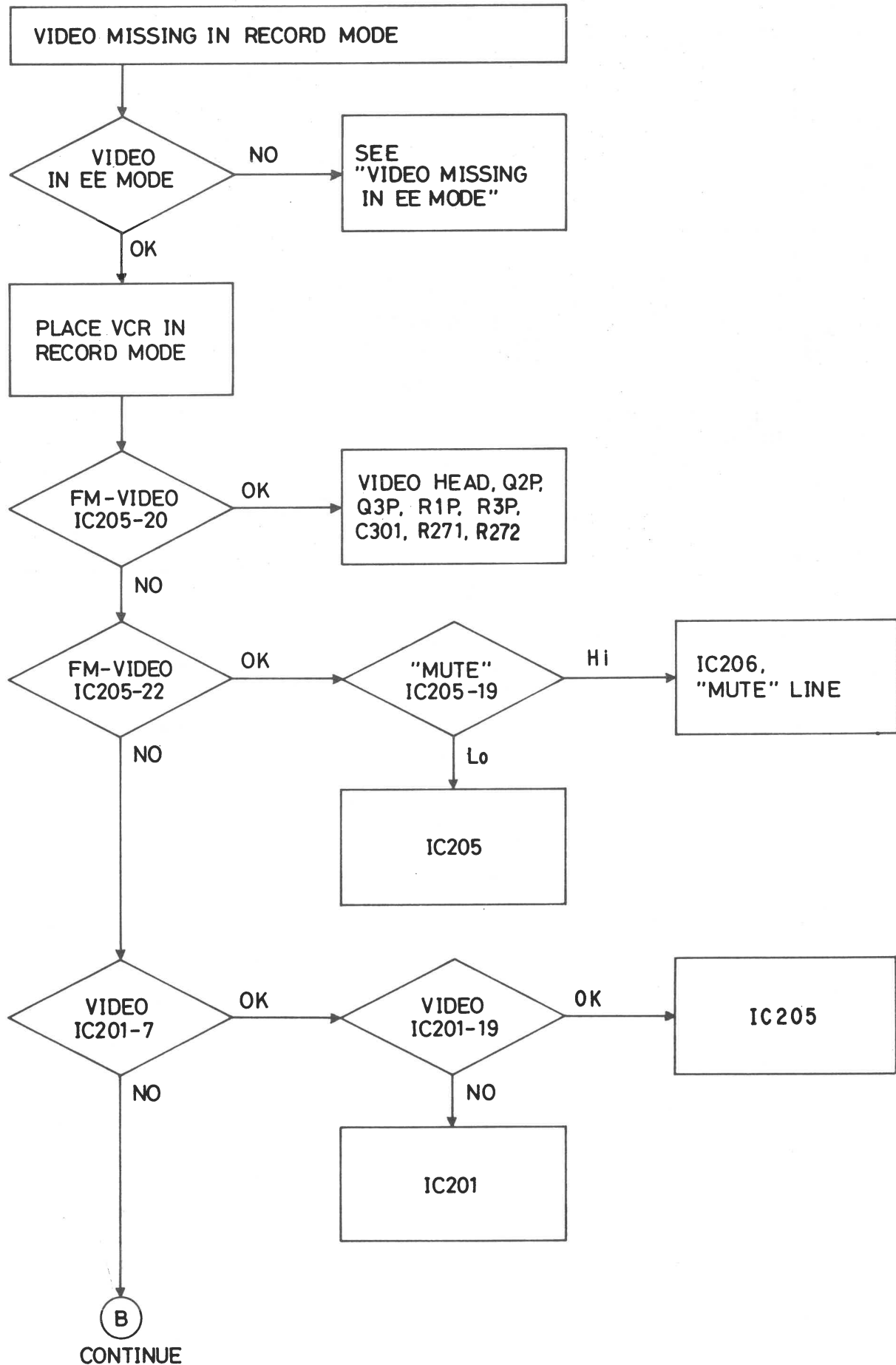
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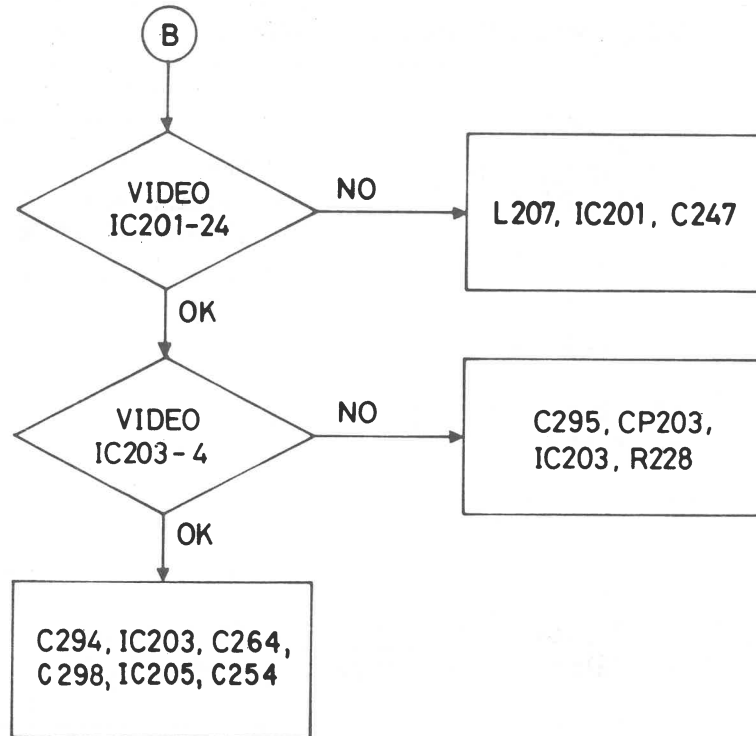
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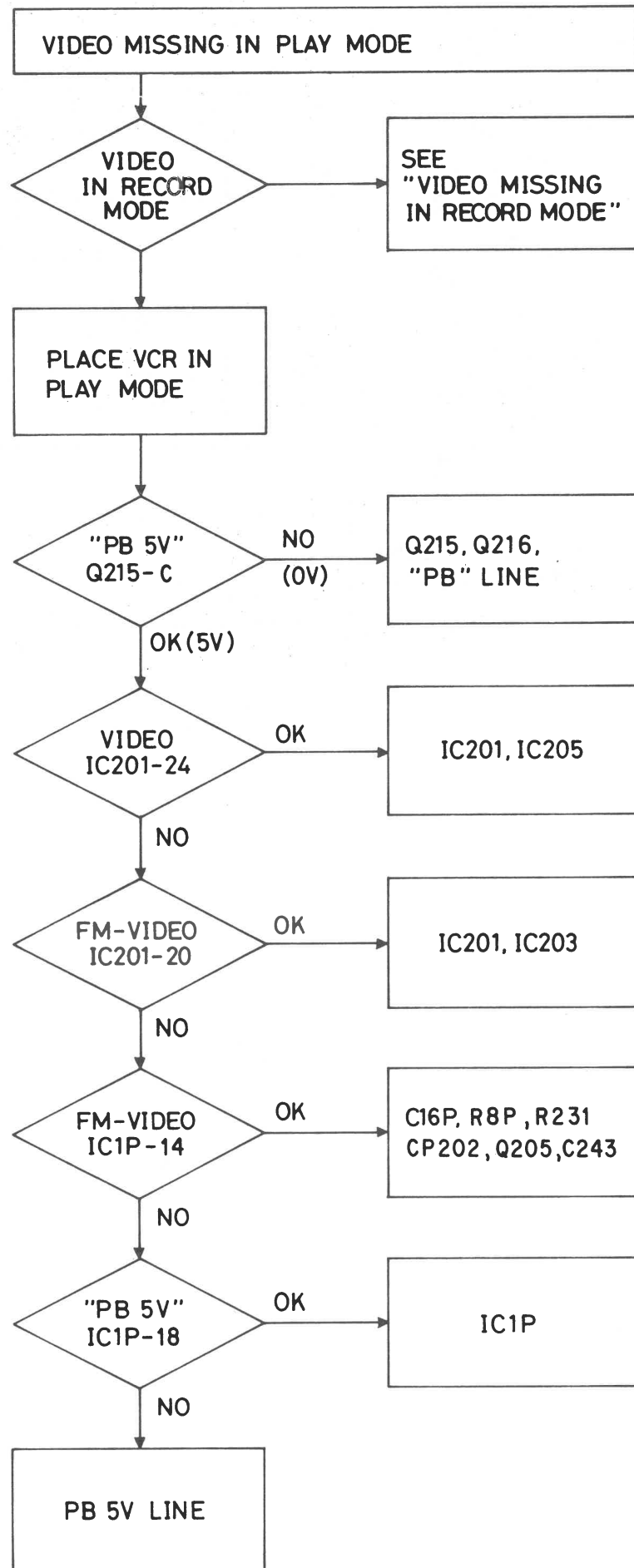
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## TROUBLESHOOTING GUIDES (Continued)

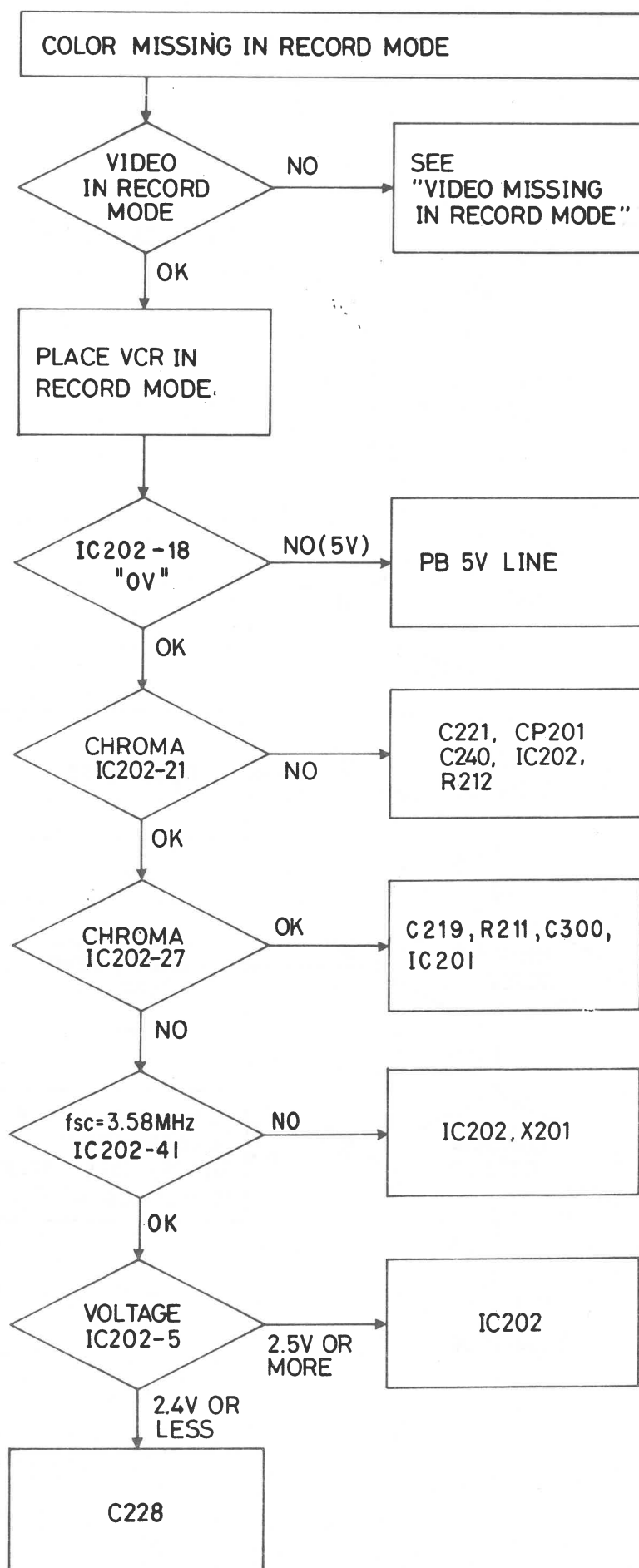


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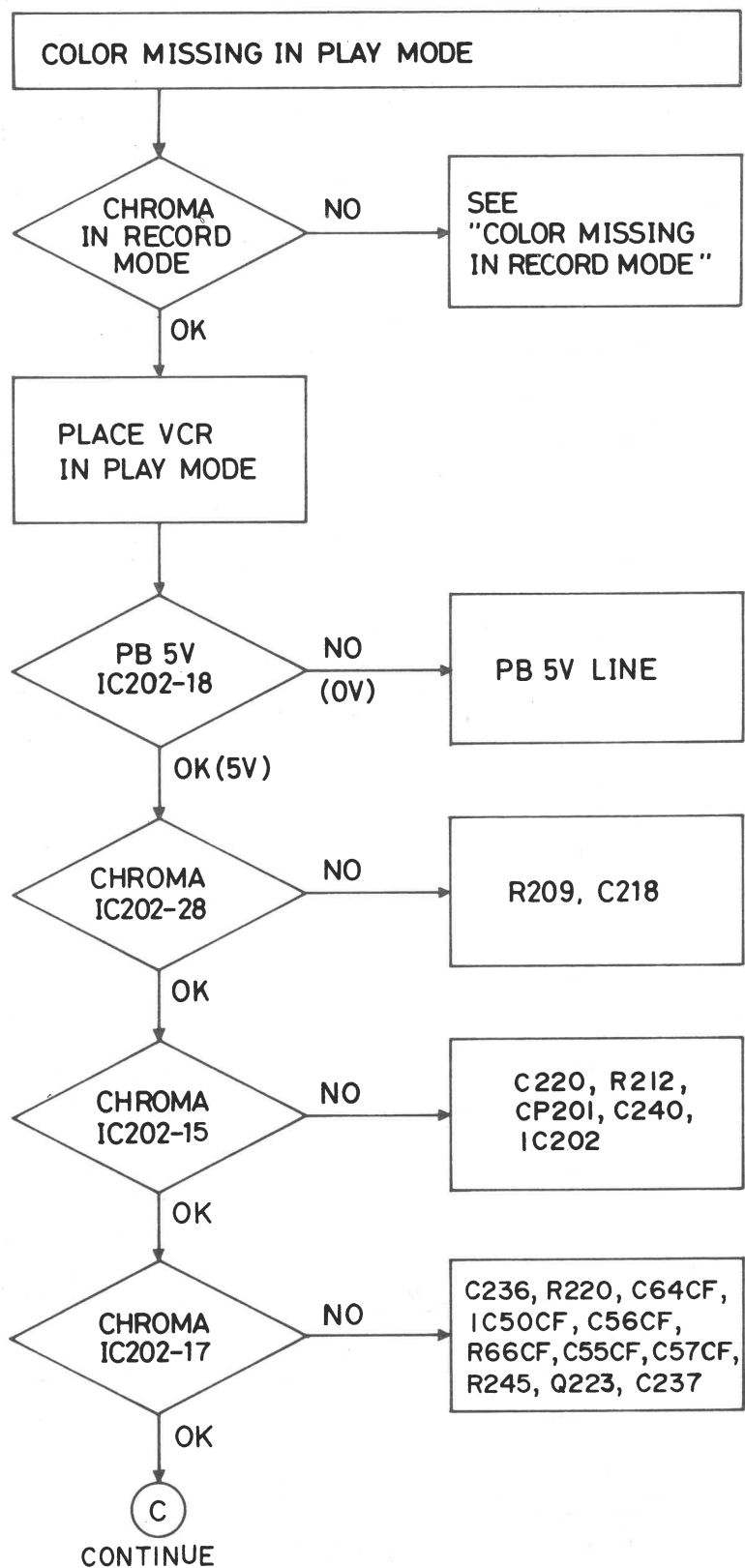


## 2-F8

### TROUBLESHOOTING GUIDES (Continued)

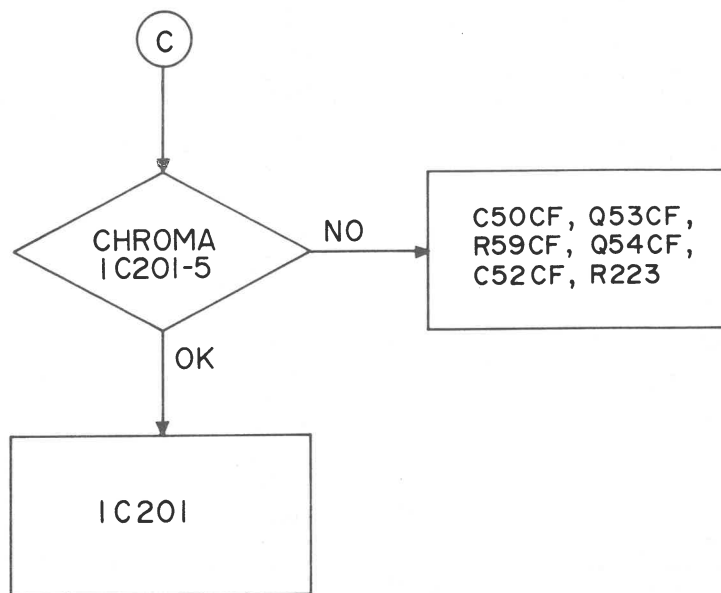


## TROUBLESHOOTING GUIDES (Continued)



## 2-G2

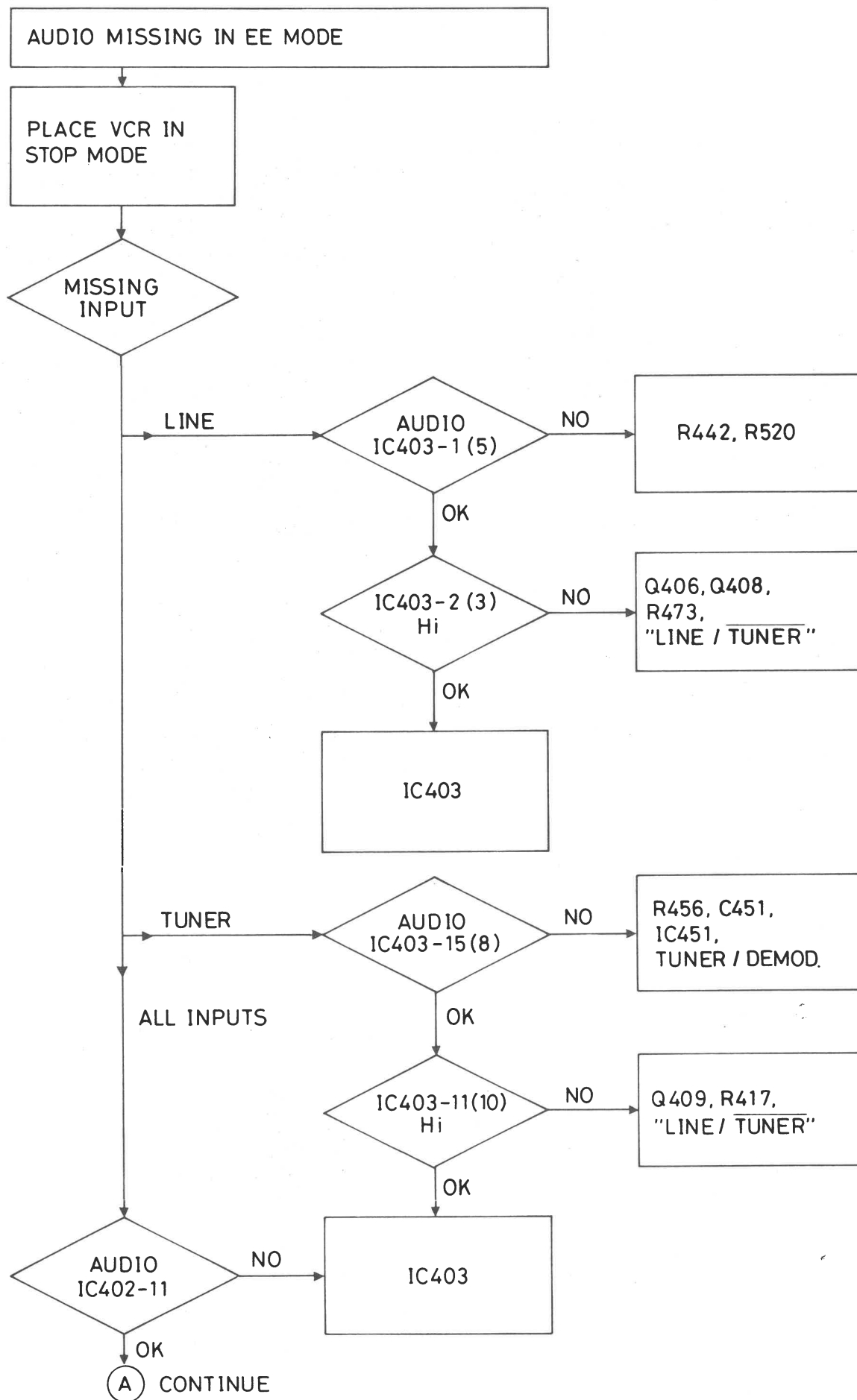
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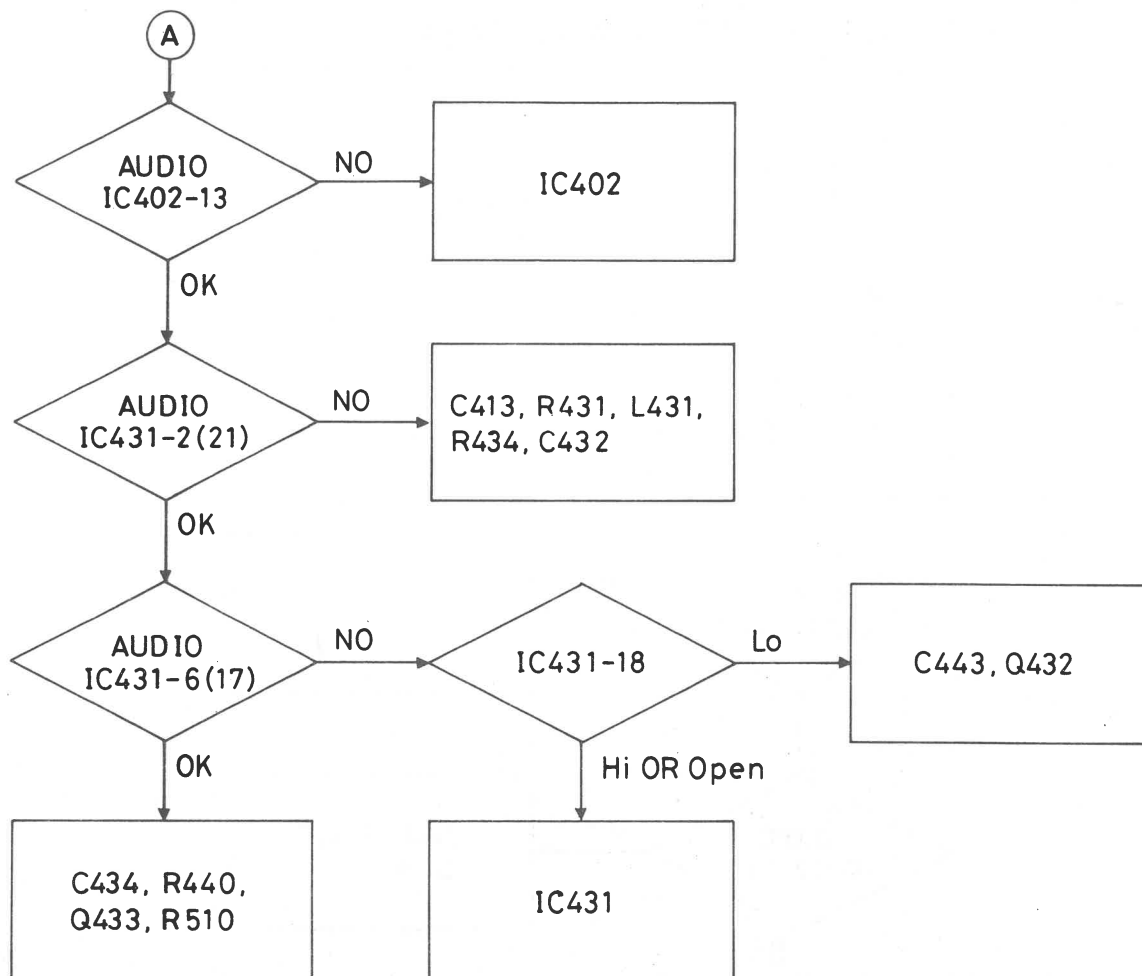
## 2-G3

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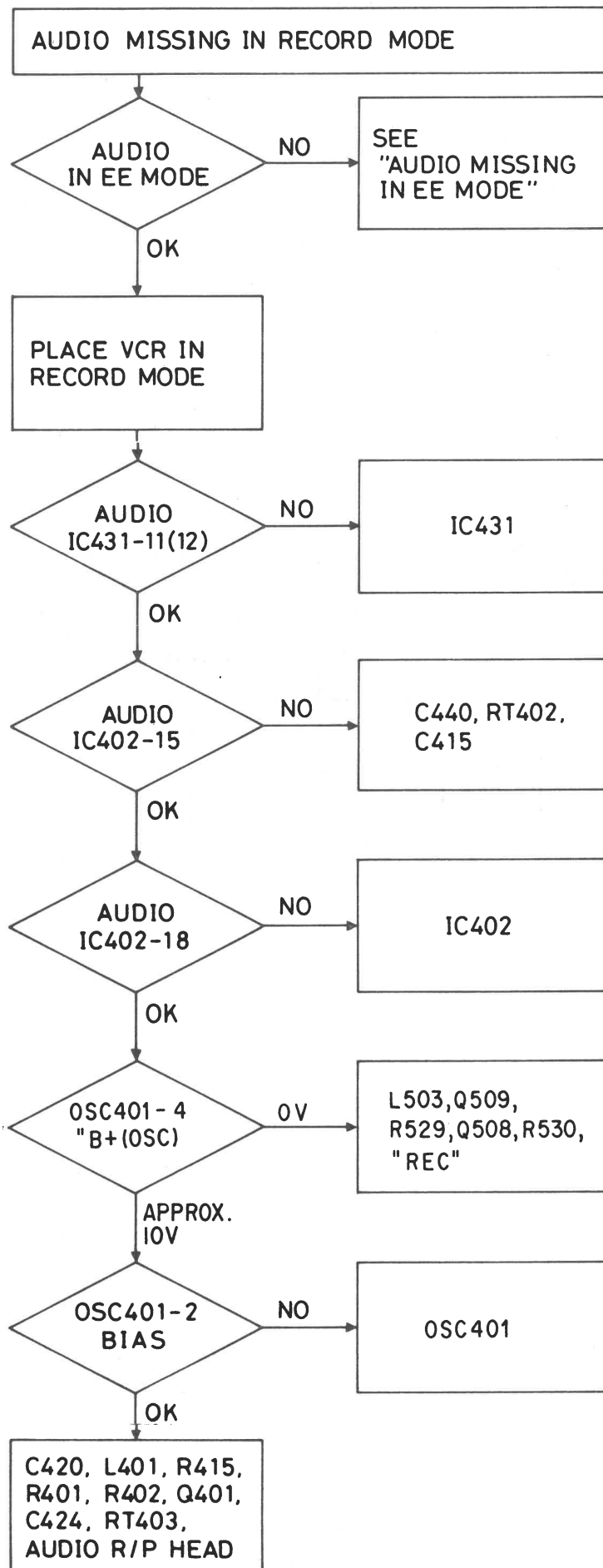


## 2-G4

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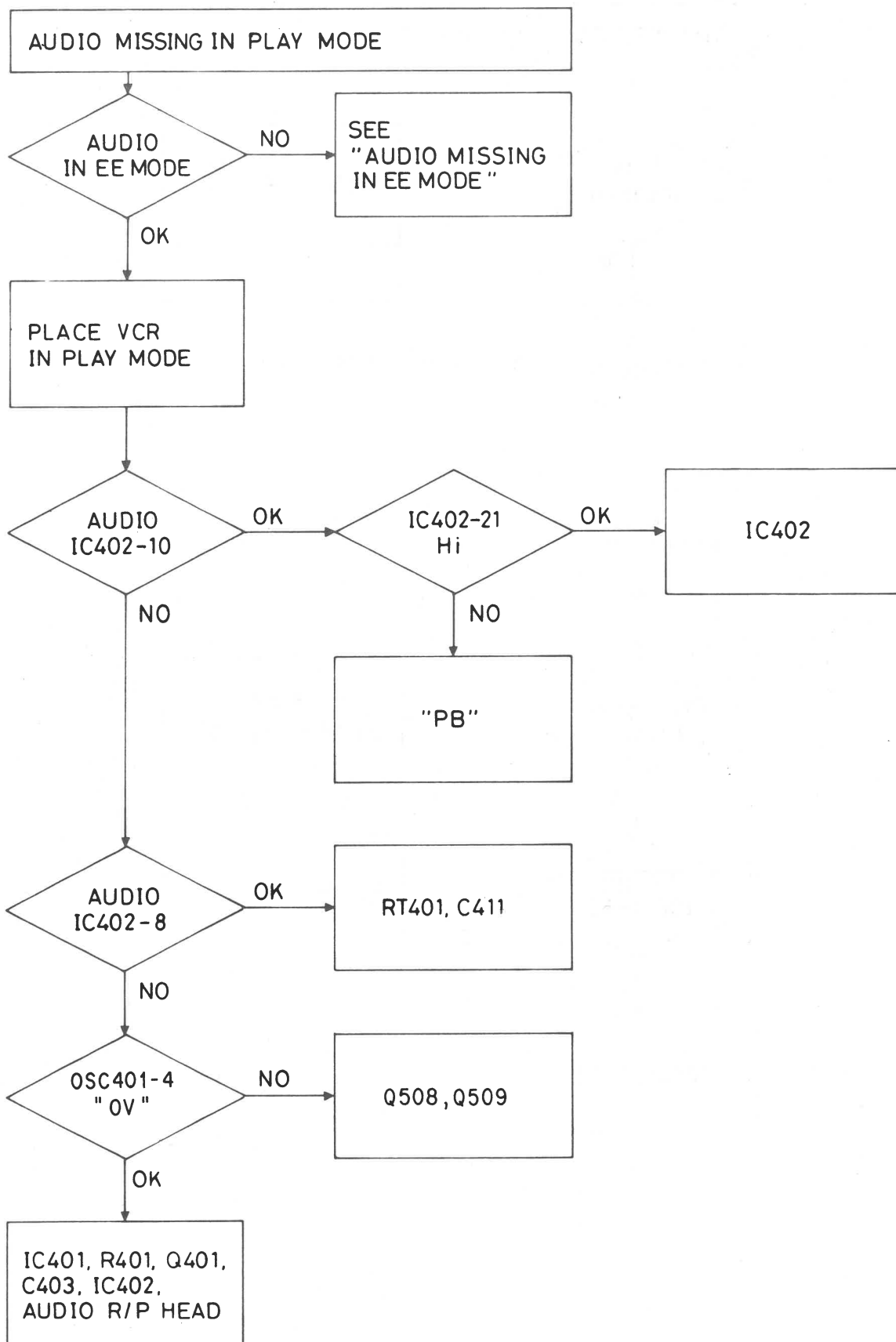


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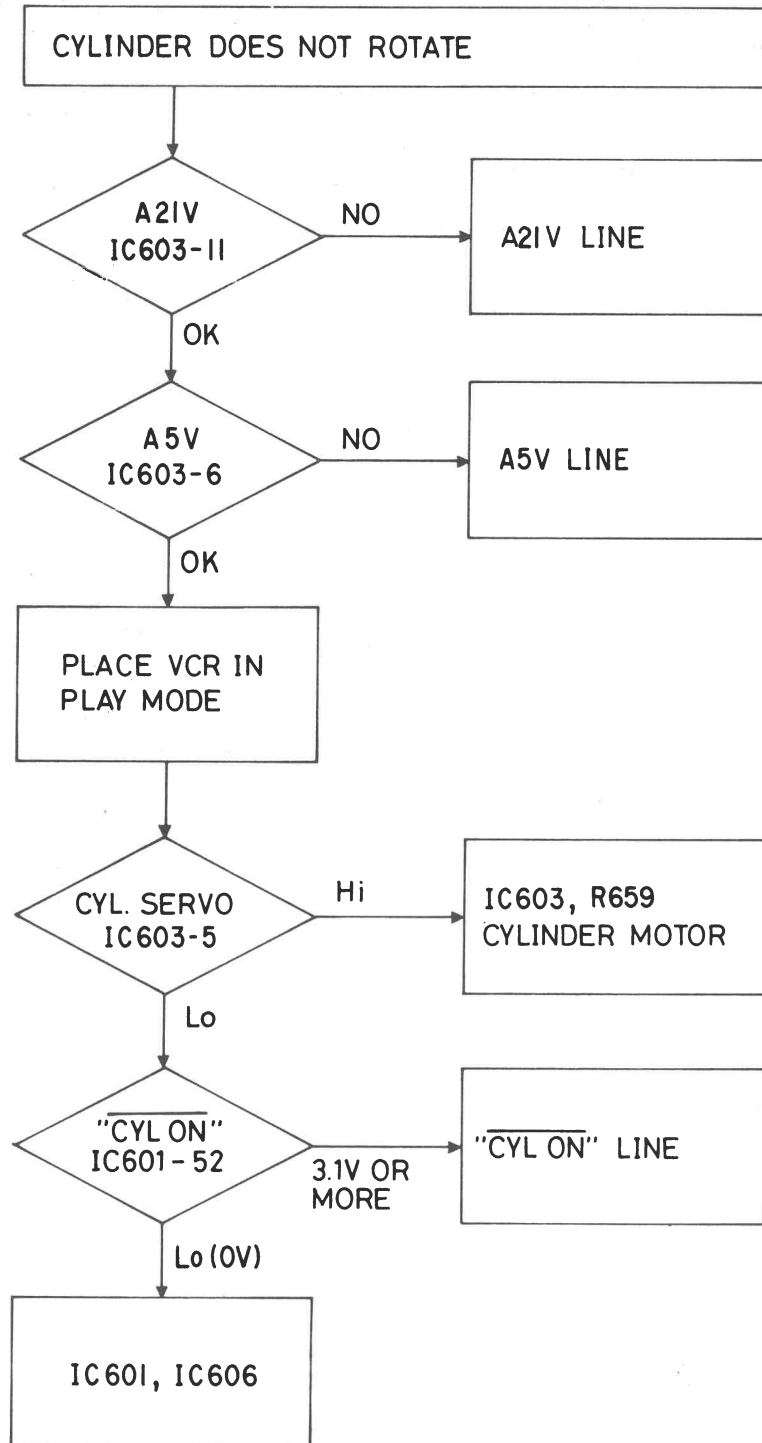
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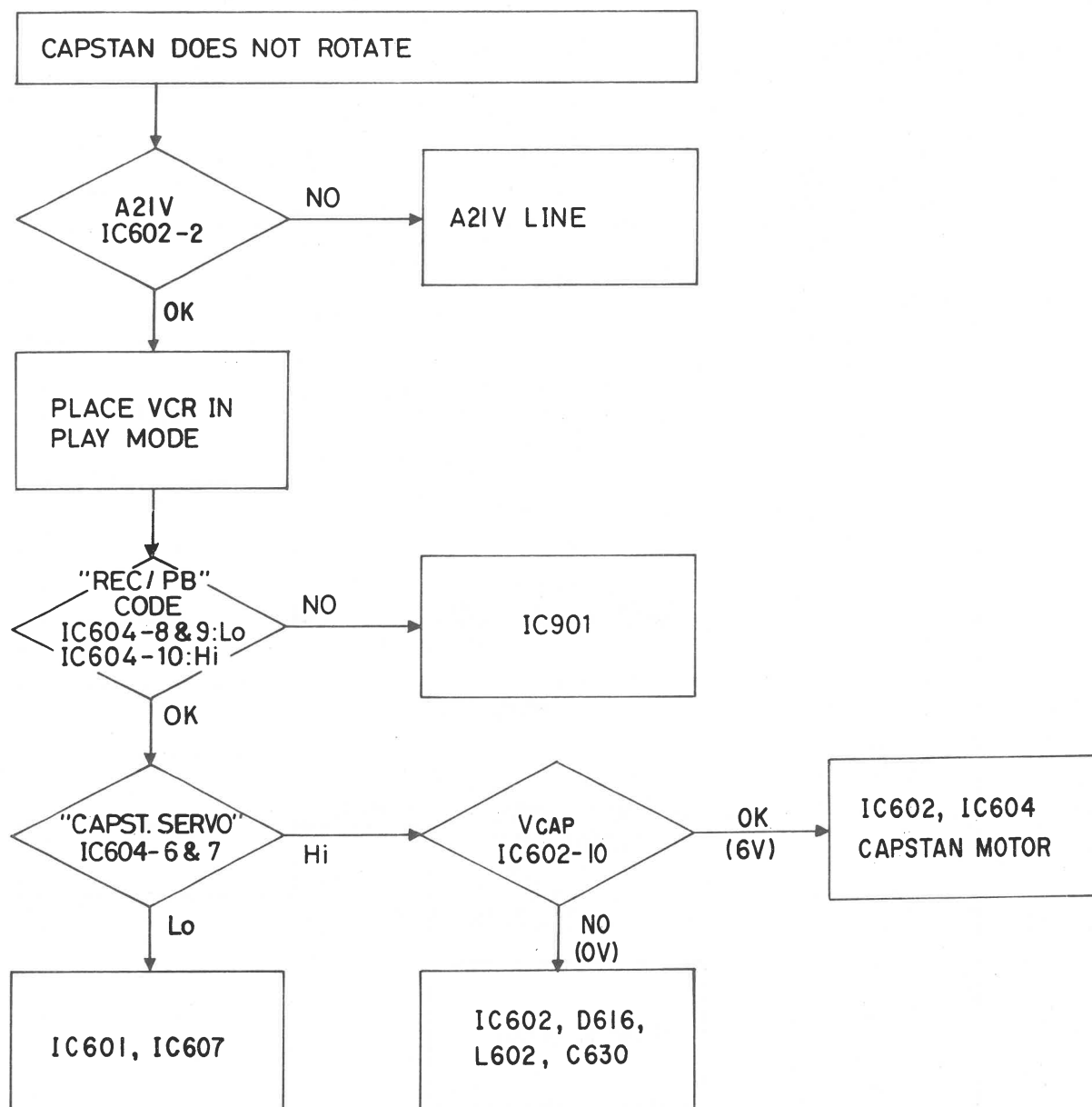
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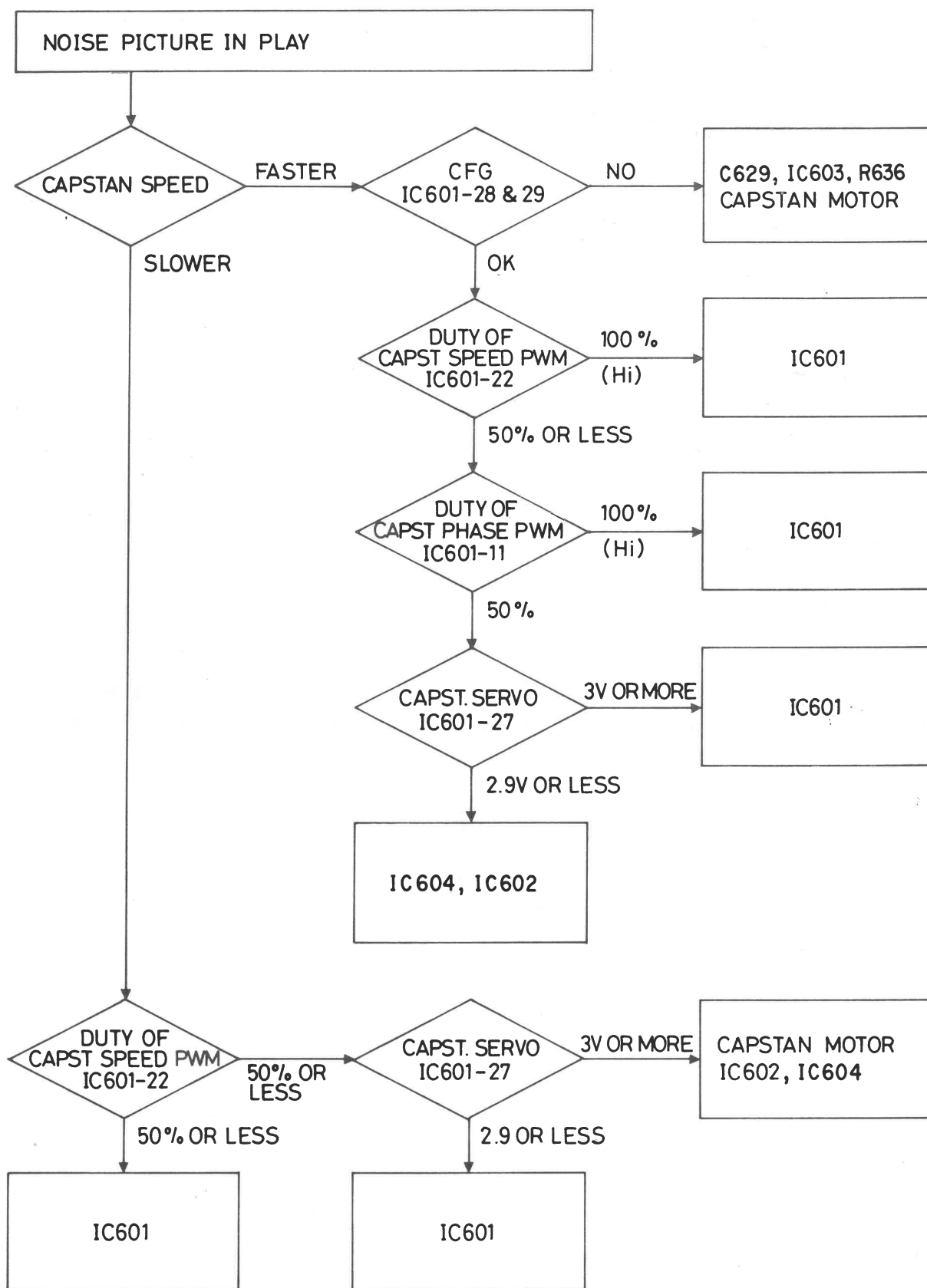


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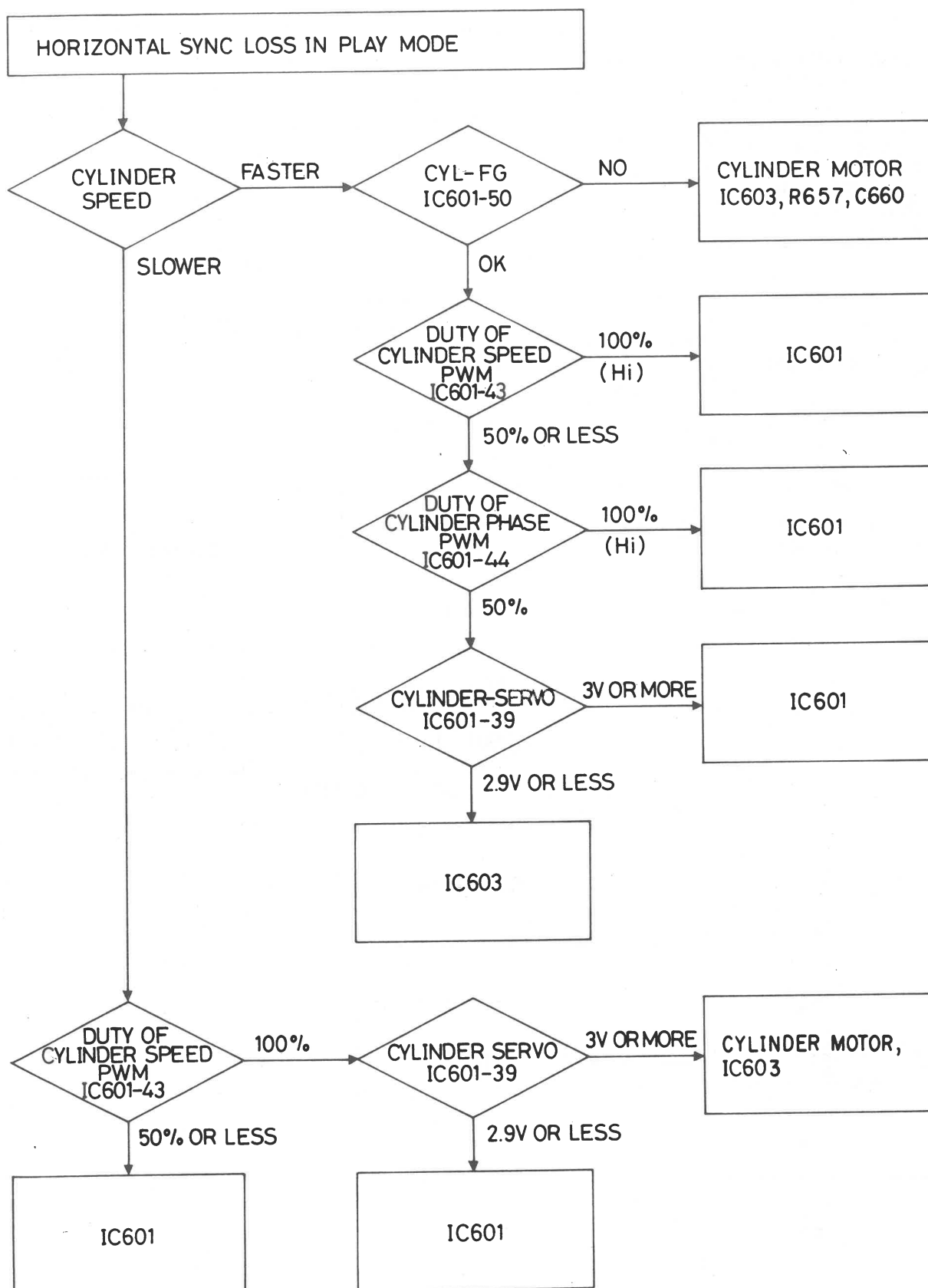


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## 2-H2

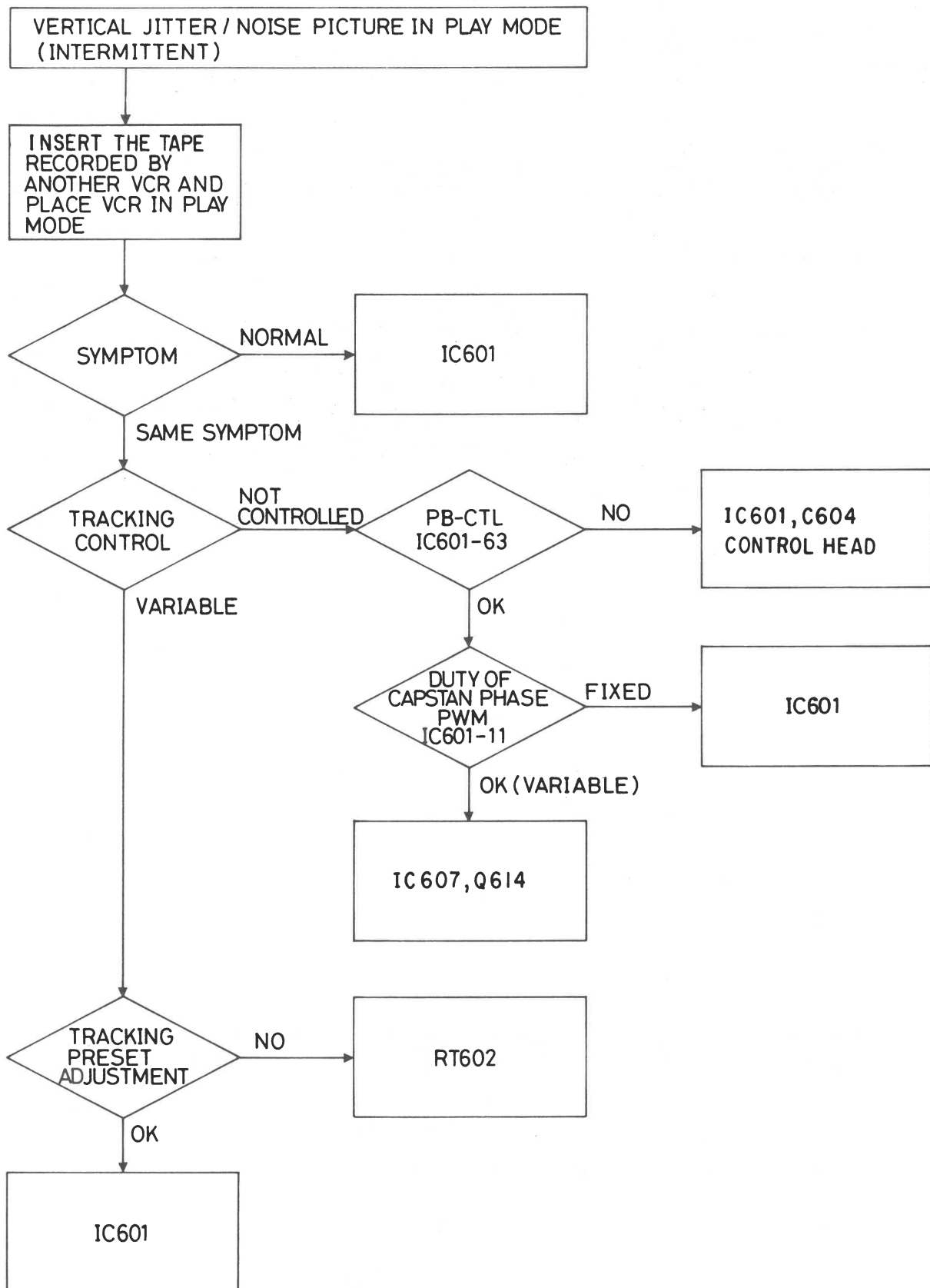
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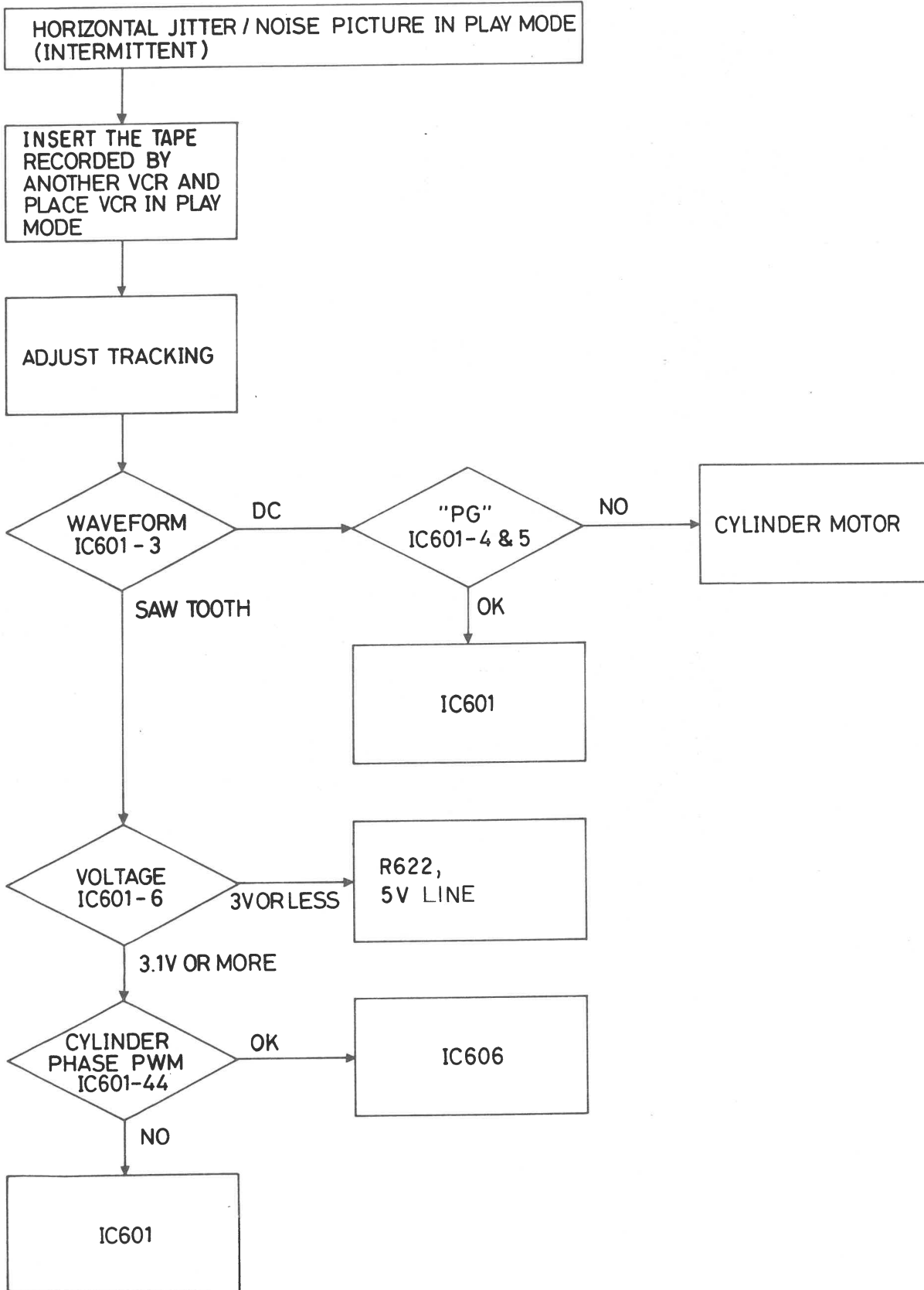
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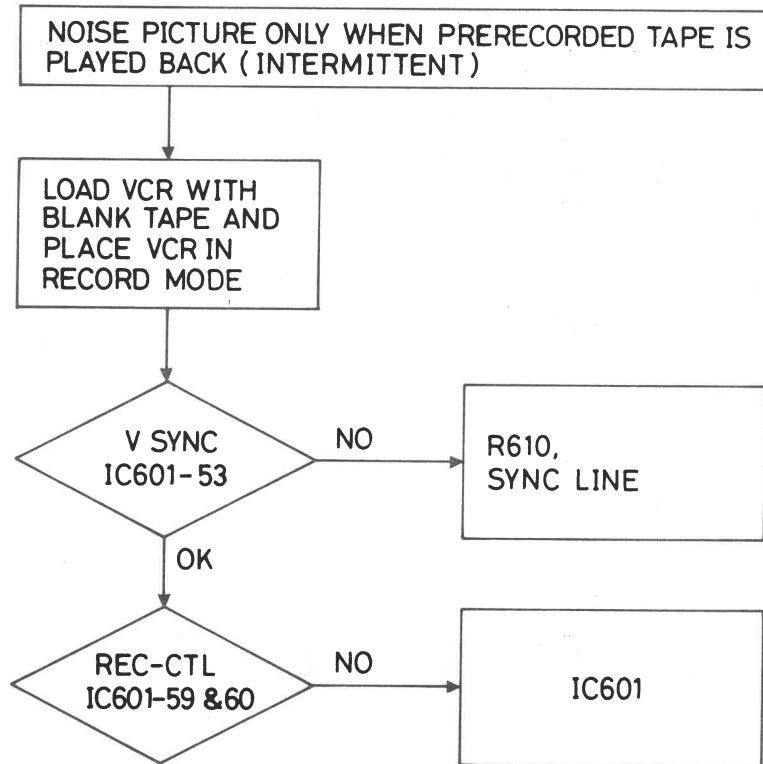
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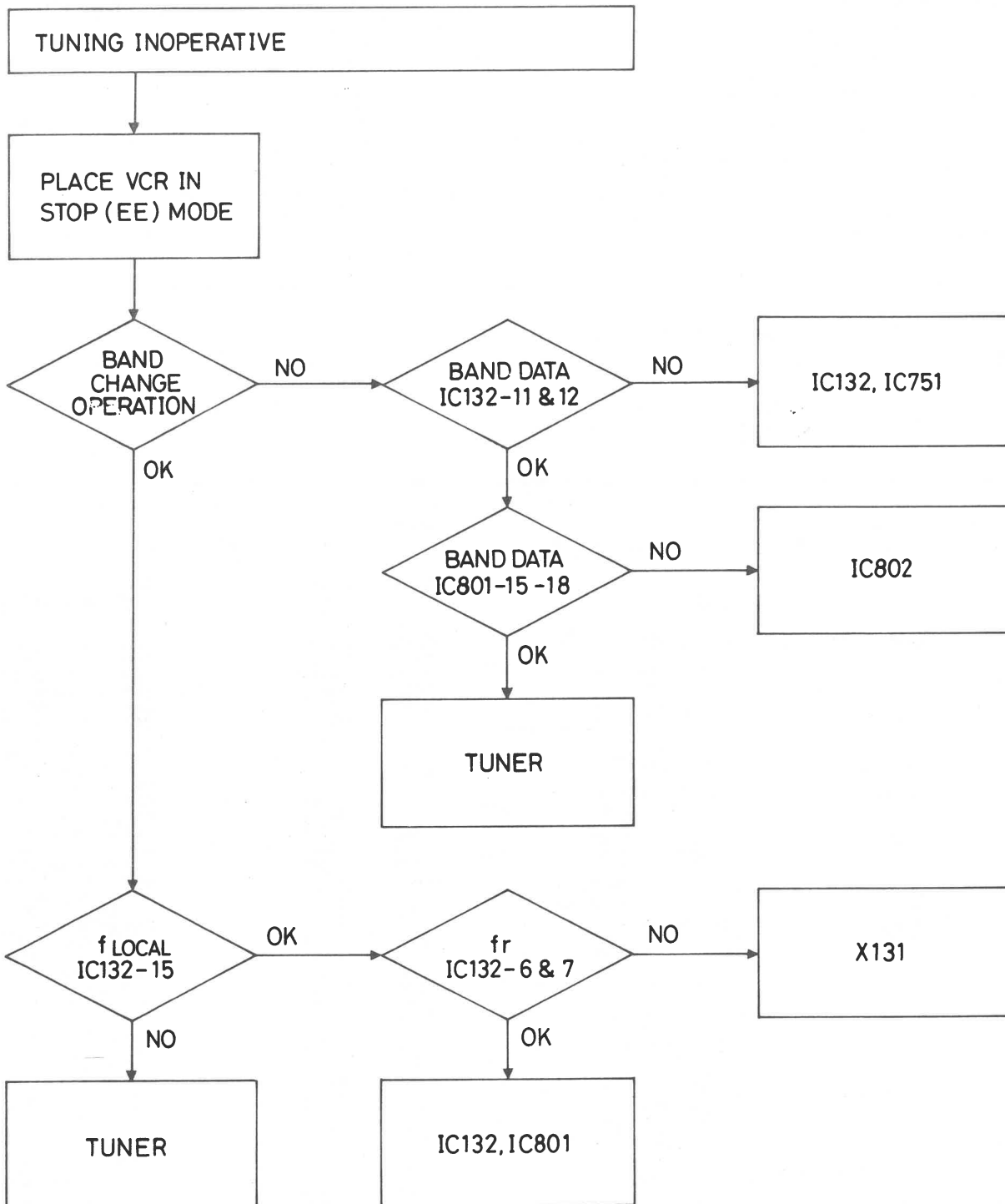
## 2-H5

### TROUBLESHOOTING GUIDES (Continued)



## 2-H6

### TROUBLESHOOTING GUIDES (Continued)



## REPLACEMENT PARTS

## BEFORE REPLACING PARTS, READ THE FOLLOWING:

**Approved Substitute Stock Numbers**—Before ordering stock numbers in the parts list, look for an approved substitute stock number in the current Price Schedule. This will minimize your service time and avoid ordering parts you already have in stock.

**PRODUCT SAFETY NOTE**—Components marked with a (\*) have special characteristics important to safety. Before replacing any of these components, read carefully the **PRODUCT SAFETY NOTICE** in the basic service data. Do not degrade the safety of the set through improper servicing. Although assemblies as a whole may not be marked with a (\*), replacement of assemblies with other assemblies not approved may result in a safety hazard.

**Warranty Status of Assemblies and Parts**—The warranty status of some assemblies and parts are indicated by one of the following Warranty Status Codes:

- Complete assembly not eligible for warranty exchange or replacement.
- ‡ Complete assembly eligible for warranty replacement with new or rebuilt unit.

All parts listed without a Warranty Status Code symbol are eligible for warranty replacement as discrete components.

Warranty replacement of cabinet parts requires prior approval.

Warranty Status and Specifications of assemblies and parts are subject to change without notice.

**\*NOTE:** When ordering components that are listed more than once in this parts list, always adhere to the serial number application guidelines given in the description column. If a serial number application guideline is not given, al-

ways select the component with a value, rating, other specifications, or identification marking(s) that match those of the corresponding component in the instrument you are servicing.

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
<b>VPT395</b>							
<b>COMPLETE ELECTRICAL ASSEMBLIES</b>							
			CIRCUIT, AUDIO CONTROL HEAD PART OF #234				CAP LYTC 1UF 50V
181872			● CIRCUIT, AUDIO/DOLBY NR	C61G	152246		CAPCC .01UF M 50V
182764			‡ CIRCUIT, AUDIO MPX	C62CF	174423		CAPCC .01UF M 50V
			CIRCUIT, CAPSTAN MOTOR PART OF #239	C63CF	174423		CAPCD 47PF J 50V
181892			● CIRCUIT, CHARACTER GENERATOR	C64CF	174423		CAPCC .01UF M 50V
182752			‡ CIRCUIT, COMB FILTER	C64G	174423		CAPCC .01UF M 50V
			CIRCUIT, CYLINDER MOTOR PART OF #502	C65CF	174423		CAPCC .01UF M 50V
180956			‡ CIRCUIT, END LED	C65G	174423		CAPCC .01UF M 50V
			CIRCUIT, HEAD FULL ERASE PART OF #232	C66G	144570		CAP POLY 1000PF K 50V
178060			‡ CIRCUIT, IR RECEIVER	C67G	152239		CAP LYTC 3.3UF 50V
183155			‡ CIRCUIT, LEVEL INDICATOR	C68G	162976		CAP LYTC 100UF 6.3V
181890			● CIRCUIT, MAIN	C69G	163970		CAP LYTC 4.7UF 35V
180955			‡ CIRCUIT, MOTOR	C70CF	162642		CAP LYTC 47UF 10V
			CIRCUIT, PREAMP/HEAD SWITCH SEE #260	C70G	158989		CAPCC 56PF J 50V
			CIRCUIT, RF CONVERTER SEE #124	C71CF	152246		CAP LYTC 1UF 50V
180953			● CIRCUIT, REGULATOR	C72G	158414		CAPCC 180PF J 50V
181214			‡ CIRCUIT, REEL SENSOR	C73G	159052		CAPCC 680PF J 50V
182890			● CIRCUIT, SERVO/SYSTEM CONTROL	C74G	152246		CAP LYTC 1UF 50V
180958			‡ CIRCUIT, SUPPLY END SENSOR	C75G	144647		CAP POLY .022UF K 50V
181891			● CIRCUIT, TIMER/INPUT KEY/FUNCTION SW	C201	147036		CAPCD .01UF M 50V
			CIRCUIT, TUNER/IF/DEMODULATOR SEE #126	C202	162643		CAP LYTC 220UF 10V
<b>ELECTRICAL COMPONENTS</b>				C205	152246		CAP LYTC 1UF 50V
BL601	180900		FILTER	C206	162787		CAP LYTC 22UF 50V
BL602	180900		FILTER	C207	162388		CAPCD .022UF K 50V
BL603	180063		FILTER	C208	146189		CAPCD 3300PF M 50V
C50CF	158336		CAPCC .022UF K 50V	C209	177251		CAPCD .068UF K 16V
C51CF	174409		CAPCC 47PF J 50V	C210	177257		CAPCD .015UF K 16V
C51G	151511		CAP LYTC 330UF 10V	C211	148405		CAPCD 820PF K 50V
C52CF	158336		CAPCC .022UF K 50V	C212	162388		CAPCD .022UF K 50V
C52G	174423		CAPCC .01UF M 50V	C213	162643		CAP LYTC 220UF 10V
C53CF	174414		CAPCC 120PF J 50V	C214	147036		CAPCD .01UF M 50V
C53G	159666		CAP LYTC 10UF 50V	C215	177592		CAPCD .047UF K 16V
C54CF	174423		CAPCC .01UF M 50V	C216	148527		CAPCD 56PF J 50V
C55CF	159024		CAPCC 22PF J 50V	C217	162388		CAPCD .022UF K 50V
C55G	152246		CAP LYTC 1UF 50V	C218	150853		CAPCD 1000PF K 50V
C56CF	174423		CAPCC .01UF M 50V	C219	147036		CAPCD .01UF M 50V
C57CF	174423		CAPCC .01UF M 50V	C220	147036		CAPCD .01UF M 50V
C58CF	158336		CAPCC .022UF K 50V	C221	150853		CAPCD 1000PF K 50V
C59CF	174423		CAPCC .01UF M 50V	C222	162388		CAPCD .022UF K 50V
C59G	158415		CAPCC 560PF J 50V	C224	152220		CAP LYTC 100UF 16V
C60CF	174423		CAPCC .01UF M 50V	C225	150855		CAPCD 18PF J 50V
C60G	153188		CAP POLY 1500PF K 50V	C226	150854		CAPCD 47PF J 50V
C61CF	174423		CAPCC .01UF M 50V	C227	147957		CAPCD 220PF K 50V
				C228	151240		CAP LYTC .22UF 50V
				C229	162787		CAP LYTC 22UF 50V
				C230	177259		CAPCD .033UF K 16V
				C231	162787		CAP LYTC 22UF 50V
				C232	159943		CAPCD 680PF K 50V
				C233	150853		CAPCD 1000PF K 50V
				C235	147036		CAPCD .01UF M 50V
				C236	147036		CAPCD .01UF M 50V
				C237	147036		CAPCD .01UF M 50V
				C238	147036		CAPCD .01UF M 50V
				C239	159939		CAP LYTC .1UF 50V
				C240	147036		CAPCD .01UF M 50V
				C242	179291		CAPCD 10PF J 50V
				C243	150844		CAPCD 27PF J 50V
				C244	146764		CAPCD 330PF K 50V
				C245	158417		CAP LYTC 33UF 10V
				C246	151512		CAPCD 100PF J 50V
				C247	144587		CAP LYTC 47UF 6V
				C248	162643		CAP LYTC 220UF 10V

## REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
C249	152275		CAP LYTC 100UF 10V	C435R	174271		CAP POLY .01UF K 50V
C250	163970		CAP LYTC 4.7UF 35V	C437L	151509		CAP POLY .015UF K 50V
C251	151512		CAPCD 100PF J 50V	C437R	151509		CAP POLY .015UF K 50V
C252	152267		CAP LYTC 47UF 16V	C438L	160391		CAP LYTC 2.2UF 50V
C253	157468		CAPCD 15PF J 50V	C438R	160391		CAP LYTC 2.2UF 50V
C254	152220		CAP LYTC 100UF 16V	C439L	146440		CAP LYTC .68UF 50V
C256	146365		CAP LYTC 4.7UF 35V	C439R	146440		CAP LYTC .68UF 50V
C257	161440		CAP LYTC 470UF 10V	C440L	158330		CAP LYTC 10UF 16V
C274	147036		CAPCD .01UF M 50V	C440R	158330		CAP LYTC 10UF 16V
C275	152246		CAP LYTC 1UF 50V	C441	160389		CAP LYTC 220UF 10V
C276	158337		CAP LYTC .47UF 50V	C442L	160136		CAP POLY 6800PF K 50V
C277	162388		CAPCD .022UF K 50V	C442R	160136		CAP POLY 6800PF K 50V
C278	152275		CAP LYTC 100UF 10V	C443L	146365		CAP LYTC 4.7UF 35V
C279	162388		CAPCD .022UF K 50V	C443R	146365		CAP LYTC 4.7UF 35V
C280	152267		CAP LYTC 47UF 16V	C444	160391		CAP LYTC 2.2UF 50V
C281	163970		CAP LYTC 4.7UF 35V	C451L	158330		CAP LYTC 10UF 16V
C282	178815		CAPCD 39PF J 50V	C451R	158330		CAP LYTC 10UF 16V
C283	163970		CAP LYTC 4.7UF 35V	C452	152220		CAP LYTC 100UF 16V
C284	162388		CAPCD .022UF K 50V	C453	146365		CAP LYTC 4.7UF 35V
C285	129625		CAP LYTC 330UF 16V	C471	158417		CAP LYTC 33UF 10V
C286	147036		CAPCD .01UF M 50V	C501	158417		CAP LYTC 33UF 10V
C287	147036		CAPCD .01UF M 50V	C502	146764		CAPCD 330PF K 50V
C288	150844		CAPCD 27PF J 50V	C503	152246		CAP LYTC 1UF 50V
C289	147036		CAPCD .01UF M 50V	C504	152246		CAP LYTC 1UF 50V
C290	162388		CAPCD .022UF K 50V	C505	147626		CAP LYTC 470UF 6V
C291	179291		CAPCD 10PF J 50V	C506	158417		CAP LYTC 33UF 10V
C294	144587		CAP LYTC 47UF 6V	C507	152267		CAP LYTC 47UF 16V
C295	144587		CAP LYTC 47UF 6V	C508	152246		CAP LYTC 1UF 50V
C296	161440		CAP LYTC 470UF 10V	C509	152267		CAP LYTC 47UF 16V
C297	162388		CAPCD .022UF K 50V	C510	162388		CAPCD .022UF K 50V
C298	152267		CAP LYTC 47UF 16V	C511	152220		CAP LYTC 100UF 16V
C299	147036		CAPCD .01UF M 50V	C512	152220		CAP LYTC 100UF 16V
C300	147036		CAPCD .01UF M 50V	C513	152220		CAP LYTC 100UF 16V
C301	160391		CAP LYTC 1UF 50V	C515	158417		CAP LYTC 33UF 10V
C302	152267		CAP LYTC 47UF 16V	C516	158417		CAP LYTC 33UF 10V
C305	146365		CAP LYTC 4.7UF 35V	C520	152220		CAP LYTC 100UF 16V
C306	152267		CAP LYTC 47UF 16V	C521	152246		CAP LYTC 1UF 50V
C307	162388		CAPCD .022UF K 50V	C522	152220		CAP LYTC 100UF 16V
C308	147036		CAPCD .01UF M 50V	C523	162388		CAPCD .022UF K 50V
C312	147544		CAPCD 560PF J N330 50V	C525	151500		CAPCD .01UF M 50V
C313	148067		CAPCD 470PF K 50V	C527	154354		CAP LYTC .33UF 50V
C314	146764		CAPCD 330PF K 50V	C528	152220		CAP LYTC 100UF 16V
C315	162388		CAPCD .022UF K 50V	C529	162388		CAPCD .022UF K 50V
C321	148527		CAPCD 56PF J 50V	C532	151512		CAPCD 100PF J 50V
C322	181990		CAP CD 12PF J 50V	C601	158337		CAP LYTC .47UF 50V
C349	147036		CAPCD .01UF M 50V	C602	148419		CAP LYTC 100UF 6V
C402L	151509		CAP POLY .015UF K 50V	C603	159761		CAPCD .047UF Z 50V
C402R	151509		CAP POLY .015UF K 50V	C604	152220		CAP LYTC 100UF 16V
C403L	158330		CAP LYTC 10UF 16V	C605	147036		CAPCD .01UF M 50V
C403R	158330		CAP LYTC 10UF 16V	C606	162388		CAPCD .022UF K 50V
C404	146276		CAP LYTC 47UF 10V	C607	149155		CAPCD 2200PF M 50V
C405	146276		CAP LYTC 47UF 10V	C608	150816		CAP POLY .033UF K 50V
C406L	146764		CAPCD 330PF K 50V	C610	162787		CAP LYTC 22UF 50V
C406R	146764		CAPCD 330PF K 50V	C611	148067		CAPCD 470PF K 50V
C407L	152251		CAPCD 3300PF K 50V	C612	150853		CAPCD 1000PF K 50V
C407R	152251		CAPCD 3300PF K 50V	C613	143884		CAPCD .01UF Z Z5V 50V
C408L	152251		CAPCD 3300PF K 50V	C614	156253		CAP POLY .047UF K 50V
C408R	152251		CAPCD 3300PF K 50V	C615	158330		CAP LYTC 10UF 50V
C409L	177257		CAPCD .015UF K 16V	C617	148419		CAP LYTC 100UF 6V
C409R	177257		CAPCD .015UF K 16V	C618	147036		CAPCD .01UF M 50V
C410L	152275		CAP LYTC 100UF 10V	C619	162642		CAP LYTC 47UF 10V
C410R	152275		CAP LYTC 100UF 10V	C620	153335		CAP POLY .068UF K 50V
C411L	158337		CAP LYTC .47UF 50V	C621	152246		CAP LYTC 1UF 50V
C411R	158337		CAP LYTC .47UF 50V	C624	149711		CAP LYTC 4.7UF 25V
C412L	146276		CAP LYTC 47UF 10V	C627	150853		CAPCD 1000PF K 50V
C412R	146276		CAP LYTC 47UF 10V	C629	152019		CAP LYTC 22UF 10V
C413L	146365		CAP LYTC 4.7UF 35V	C630	150737		CAPCD 270PF J 50V
C413R	146365		CAP LYTC 4.7UF 35V	C631	177592		CAPCD .047UF K 16V
C414L	158330		CAP LYTC 10UF 16V	C632	145257		CAP LYTC 100UF 35V
C414R	158330		CAP LYTC 10UF 16V	C633	151512		CAPCD 100PF J 50V
C415L	146365		CAP LYTC 4.7UF 35V	C636	147036		CAPCD .01UF M 50V
C415R	146365		CAP LYTC 4.7UF 35V	C651	162388		CAPCD .022UF K 50V
C416L	177259		CAPCD .033UF K 16V	C652	152220		CAP LYTC 100UF 16V
C416R	177259		CAPCD .033UF K 16V	C653	150855		CAPCD 18PF J 50V
C417L	159640		CAP POLY .1UF K 50V	C654	143884		CAPCD .01UF Z Z5V 50V
C417R	159640		CAP POLY .1UF K 50V	C655	151518		CAPCD 560PF K 50V
C418L	177258		CAPCD .047UF K 16V	C656	159968		CAP LYTC 47UF 50V
C418R	177592		CAPCD .047UF K 16V	C657	145257		CAP LYTC 100UF 35V
C419L	150853		CAPCD .001UF K 50V	C658	151240		CAP LYTC .22UF 50V
C419R	150853		CAPCD .001UF K 50V	C660	160388		CAP LYTC 22UF 16V
C420L	146365		CAP LYTC 4.7UF 35V	C661	150855		CAPCD 18PF J 50V
C420R	146365		CAP LYTC 4.7UF 35V	C662	150855		CAPCD 18PF J 50V
C424L	147957		CAPCD 220PF K 50V	C663	150855		CAPCD 18PF J 50V
C424R	147957		CAPCD 220PF K 50V	C664	152220		CAP LYTC 100UF 16V
C431L	151912		CAP LYTC 220UF 16V	C665	152220		CAP LYTC 100UF 16V
C432L	146365		CAP LYTC 4.7UF 35V	C666	152220		CAP LYTC 100UF 16V
C432R	146365		CAP LYTC 4.7UF 35V	C667	152141		CAP LYTC 220UF 35V
C433L	158337		CAP LYTC .47UF 50V	C670	159761		CAPCD .047UF Z 50V
C433R	158337		CAP LYTC .47UF 50V	C671	138144		CAP POLY 3300PF K 50V
C434L	158330		CAP LYTC 10UF 16V	C672	174271		CAP POLY .01UF K 50V
C434R	158330		CAP LYTC 10UF 16V	C673	138144		CAP POLY 3300PF K 50V
C435L	174271		CAP POLY .01UF K 50V	C674	152220		CAP LYTC 100UF 16V

## REPLACEMENT PARTS (Continued)

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SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
C675	158330		CAP LYTC 10UF 16V	CP201	181521		FILTER
C676	152220		CAP LYTC 100UF 16V	CP202	177145		COIL
C677	143884		CAPCD .01UF Z 25V 50V	CP203	177147		DELAY LINE
C678	146764		CAPCD 330PF K 50V	CP204	178528		FILTER
C679	141602		CAP LYTC 330UF 35V				
C680	153335		CAP POLY .068UF K 50V	D51G	177092		DIODE
C682	156253		CAP POLY .047UF K 50V	D52G	177092		DIODE
C683	152069		CAPCD 2200PF Z 50V	D53G	177092		DIODE
C684	151240		CAP LYTC .22UF 50V	D54G	177092		DIODE
C685	156253		CAP POLY .047UF K 50V	D141	181876		DIODE LED
C751	159761		CAPCD .047UF Z 50V	D204	177092		DIODE
C752	144587		CAP LYTC 47UF 6V	D205	177092		DIODE
C753	162388		CAPCD .022UF K 50V	D206	177092		DIODE
C754	149155		CAPCD 2200PF M 50V	D207	177092		DIODE
C755	177592		CAPCD .047UF K 16V	D208	177092		DIODE
C756	150853		CAPCD 1000PF K 50V	D211	177092		DIODE
C757	144587		CAP LYTC 47UF 6V	D401	164747		DIODE
C758	150854		CAPCD 47PF J 50V	D403	164747		DIODE
C759	151521		CAPCD 33PF J 50V	D451	153493		DIODE
C760	179291		CAPCD 10PF J 50V	D452	164747		DIODE
C761	169550		CAPCD 180PF K 50V	D453	164747		DIODE
C764	152220		CAP LYTC 100UF 16V	D454	164747		DIODE
C765	152220		CAP LYTC 100UF 16V	D455	153493		DIODE
C766	162787		CAP LYTC 22UF 50V	D501	177092		DIODE
C767	162787		CAP LYTC 22UF 50V	D502	177092		DIODE
C791	143884		CAPCD .01UF Z 50V	D505	177092		DIODE
C792	152083		CAPCD .01UF Z 50V	D506	177092		DIODE
C793	151512		CAPCD 100PF J 50V	D507	177092		DIODE
C794	169550		CAPCD 180PF K 50V	D508	177092		DIODE
C795	160717		CAP LYTC 3.3UF 35V	D509	177092		DIODE
C798	181861		CAP LYTC 22000 UF 5V	D515	177092		DIODE
C799	144664		CAP LYTC 33UF 6V	D605	177092		DIODE
C801	158337		CAP LYTC .47UF 50V	D606	177092		DIODE
C802	150816		CAP POLY .033UF K 50V	D610	177092		DIODE
C803	162787		CAP LYTC 22UF 50V	D611	177092		DIODE
C804	175684		CAP POLY 6800PF J 50V	D612	177092		DIODE
C805	150816		CAP POLY .033UF K 50V	D615	177092		DIODE
C806	177706		CAP POLY .15UF K 50V	D616	181181		DIODE
C807	143884		CAPCD .01UF Z 25V 50V	D617	181181		DIODE
C808	147036		CAPCD .01UF M 50V	D618	177092		DIODE
C809	147036		CAPCD .01UF M 50V	D620	177092		DIODE
C810	147036		CAPCD .01UF M 50V	D621	177092		DIODE
C811	152267		CAP LYTC 47UF 16V	D622	177092		DIODE
C812	143884		CAPCD .01UF Z 25V 50V	D623	177092		DIODE
C813	159968		CAP LYTC 47UF 50V	D624	177092		DIODE
C814	159968		CAP LYTC 47UF 50V	D625	177092		DIODE
C815	162787		CAP LYTC 22UF 50V	D626	177092		DIODE
C816	152220		CAP LYTC 100UF 16V	D628	177092		DIODE
C817	177260		CAPCD .1UF K 16V	D630	177092		DIODE
C818	160388		CAP LYTC 22UF 16V	D636	177092		DIODE
C819	162109		CAP LYTC 22UF 6V	D637	177092		DIODE
C825	144980		CAP LYTC 4.7UF 50V	D638	177092		DIODE
C829	159968		CAP LYTC 47UF 50V	D751	177092		DIODE
C851	159761		CAPCD .047UF Z 50V	D752	177092		DIODE
C854	159956		CAP LYTC 4700UF 35V	D753	177092		DIODE
C855	143884		CAPCD .01UF Z 25V 50V	D754	177092		DIODE
C856	163902		CAP LYTC 47UF 25V	D755	177092		DIODE
C857	163902		CAP LYTC 47UF 25V	D756	177092		DIODE
C858	152243		CAP LYTC 33UF 16V	D757	177092		DIODE
C859	159761		CAPCD .047UF Z 50V	D758	177092		DIODE
C860	162642		CAP LYTC 47UF 10V	D759	177092		DIODE
C901	151521		CAPCD 33PF J 50V	D760	177092		DIODE
C902	151521		CAPCD 33PF J 50V	D762	177092		DIODE
C903	146451		CAP LYTC 100UF 25V	D763	177092		DIODE
C904	160391		CAP LYTC 1UF 50V	D767	177092		DIODE
C905	160391		CAP LYTC 1UF 50V	D801	177092		DIODE
C906	160391		CAP LYTC 1UF 50V	D802	180872		DIODE
C911	159761		CAPCD .047UF Z 50V	D803	178525		DIODE
C914	147036		CAPCD .01UF M 50V	D804	178525		DIODE
C916	162388		CAPCD .022UF K 50V	D805	178525		DIODE
C918	159761		CAPCD .047UF Z 50V	D851	180873		DIODE
C921	162388		CAPCD .022UF K 50V	D856	180872		DIODE
C922	162388		CAPCD .022UF K 50V	D857	174858		DIODE
CE901	179653		CRYSTAL	D858	174858		DIODE
				D859	174858		DIODE
				D903	177092		DIODE
				D905	177092		DIODE
				D906	177092		DIODE
				D908	177092		DIODE
CN001	181187		CONNECTOR & CABLE	DG751	181875		INDICATOR, DISPLAY
CN002	181188		CONNECTOR & CABLE				
CN004	181189		CONNECTOR & CABLE	DL50CF	182769		DELAY LINE
CN006	182735		CONNECTOR & CABLE				
CN007	180903		CONNECTOR & CABLE	FU851	147476		FUSE
CN010	182736		CONNECTOR & CABLE	FU853	156557		* FUSE
CN013	181528		CONNECTOR & CABLE				
CN021	180071		CONNECTOR & CABLE	IC50CF	182762		IC CHROMA NOISE REDUCTION
CN022	182737		CONNECTOR & CABLE	IC51G	183170		IC CHARACTER GENERATOR
CN100	183169		CONNECTOR & CABLE	IC52G	180057		IC CHARACTER VIDEO MIX
CN200	164754		CONNECTOR & CABLE	IC53G	160831		IC SYNC GENERATOR
CN723	182771		CONNECTOR & CABLE	IC54G	179123		IC SYNC DET
CN725	182692		CONNECTOR & CABLE				
CN726	182693		CONNECTOR & CABLE				
CN811	177557		CONNECTOR & CABLE				
CN812	181180		CONNECTOR & CABLE				

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SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
IC141	177547		IC TAKE-UP REEL SENSOR	PG406R	182742		CONNECTOR
IC201	181991		IC LUMA MOD DEMOD/PRE AMP	PG410	182744		CONNECTOR
IC202	177095		IC CHROMA PROCESS	PG421	178507		CONNECTOR
IC203	178519		IC DETAIL ENHANCER	PG422	177161		CONNECTOR
IC204	178522		IC 1H DELAY	PG423	177402		CONNECTOR
IC205	182751		IC REC AMP/LUMA NOISE REDUCTION	PG511	177559		CONNECTOR
				PG513	180912		CONNECTOR
IC206	178520		IC DOUBLE BUFFER	PG521	178507		CONNECTOR
IC208	182898		IC REG	PG522	177161		CONNECTOR
IC401L	182763		IC HEAD SW	PG601	159690		CONNECTOR
IC401R	182763		IC HEAD SW	PG602	177164		CONNECTOR
IC402L	182761		IC AUDIP AMP	PG606	182744		CONNECTOR
IC402R	182761		IC AUDIO AMP	PG612	163523		CONNECTOR 11 PIN
IC403	181860		IC LINE/TUNER INPUT SW	PG613	180912		CONNECTOR
IC431	182760		IC DOLBY NR	PG826	177560		CONNECTOR
				PG903	180913		CONNECTOR
IC501	157677		IC INPUT SW	PG904	177162		CONNECTOR
IC601	180876		IC	PG905	147268		CONNECTOR 2 PIN
IC602	180877		* IC CAPSTAN MOTOR DRIVE	PG925	180914		CONNECTOR
IC603	180878		* IC CYL MOTOR DRIVE				
IC604	180879		IC CAPSTAN SPEED	Q50CF	182726		TRANSISTOR INVERTER
IC605	180880		IC ARTIFICIAL SYNC GEN/DRIVE VOLTAGE SW	Q51CF	182726		TRANSISTOR
				Q51G	158391		TRANSISTOR CHARACTER GENERATOR
IC606	180881		IC FILTER	Q52CF	174640		TRANSISTOR HUE CORRECT
IC607	180882		IC FILTER	Q52G	158973		TRANSISTOR BUFFER
IC751	182759		IC TIMER/TUNING UP	Q53CF	174640		TRANSISTOR BUFFER
IC752	180885		IC RESET	Q53G	174641		TRANSISTOR INVERTER
IC753	181874		IC RCH LEVEL DISPLAY DRIVE	Q54CF	174640		TRANSISTOR BUFFER
IC754	181874		IC LCH LEVEL DISPLAY DRIVE	Q54G	158391		TRANSISTOR INVERTER
IC801	177389		IC TUNING INTERFACE BAND DECODER	Q55CF	182758		TRANSISTOR PB SW
				Q55G	158391		TRANSISTOR SYNC AMP
IC802	178390		IC 5V REG	Q56CF	182758		TRANSISTOR
IC803	181183		IC AFT DOWN DET	Q56G	158391		TRANSISTOR INVERTER
IC851	180887		* IC REGULATOR	Q57G	158391		TRANSISTOR
IC901	181873		IC SYSTEM CONTROL UP	Q58G	158391		TRANSISTOR INVERTER
IC902	180889		* IC CST/TAPE LOADING CONTROL	Q59G	158391		TRANSISTOR INVERTER
				Q141	180891		TRANSISTOR SUPPLY END SENSOR
L50CF	177125		COIL 22UH				
L51CF	182770		COIL 4.7UH	Q142	180892		TRANSISTOR TAKE-UP END SENSOR
L51G	183171		COIL 680UH				
L52CF	163809		COIL 100UH	Q202	161123		TRANSISTOR SEARCH SW
L52G	163809		COIL 100UH	Q205	161123		TRANSISTOR BUFFER
L201	163809		COIL 100UH	Q209	164353		TRANSISTOR PW SW
L203	163809		COIL 100UH	Q210	161123		TRANSISTOR BUFFER
L204	163798		COIL 820UH	Q215	178063		TRANSISTOR PB SW
L205	177126		COIL 220UH	Q216	164353		TRANSISTOR PB SW
L206	177126		COIL 220UH	Q221	161123		TRANSISTOR VIDEO
L207	177124		COIL 15UH	Q222	180893		TRANSISTOR SP SW
L208	177127		COIL 18UH	Q223	161123		TRANSISTOR AMP
L209	177129		COIL 68UH	Q224	161123		TRANSISTOR 3.58 MHZ BPF
L210	163809		COIL 100UH	Q225	164353		TRANSISTOR PB SW
L213	163809		COIL 100UH	Q227	180893		TRANSISTOR H SYNC LEVEL SW
L214	177124		COIL 15UH	Q229	182739		IC CIRCUIT PROTECTOR
L215	163809		COIL 100UH	Q401L	174640		TRANSISTOR REC SW GND
L216	163809		COIL 100UH	Q401R	174640		TRANSISTOR REC SW GND
L219	163809		COIL 100UH	Q402	173598		TRANSISTOR
L220	163809		COIL 100UH	Q404L	174641		TRANSISTOR LP EQ
L226	177127		COIL 18UH	Q404R	174641		TRANSISTOR LP EQ
L228	178529		COIL	Q405L	174641		TRANSISTOR LP EQ
L230	177126		COIL 220UH	Q405R	174641		TRANSISTOR LP EQ
L232	177551		COIL 27UH	Q406	174665		TRANSISTOR INPUT SW
L401L	148177		COIL	Q408	174640		TRANSISTOR INPUT SW
L401R	148177		COIL	Q409	174640		TRANSISTOR INPUT SW
L402L	177132		COIL 5600UH	Q410	174640		TRANSISTOR MUTE
L402R	177132		COIL 5600UH	Q431	174640		TRANSISTOR MUTE
L431L	180897		FILTER	Q432	174640		TRANSISTOR PB SW
L431R	180897		FILTER	Q433L	182757		TRANSISTOR MUTE
L432L	177126		COIL 220UH	Q433R	182757		TRANSISTOR MUTE
L432R	177126		COIL 220UH	Q451	174640		TRANSISTOR INVERTER
L501	163809		COIL 100UH	Q452	174640		TRANSISTOR MUTE SW
L502	163809		COIL 100UH	Q453	173598		TRANSISTOR INVERTER
L503	163798		COIL 820UH	Q454	174640		TRANSISTOR SAP DET
L601	180898		COIL 350UH	Q455	174640		TRANSISTOR REG
L602	180898		COIL 350UH	Q501	164959		TRANSISTOR VCR 5V SW
L851	163809		COIL 100UH	Q502	161123		TRANSISTOR BUFFER
				Q503	164959		TRANSISTOR BUFFER
LD751	164499		DIODE	Q505	164354		TRANSISTOR BUFFER
LD752	164499		DIODE	Q507	178064		TRANSISTOR OSC STOP
LD753	164499		DIODE	Q508	178064		TRANSISTOR REC SW
LD754	164499		DIODE	Q509	164959		TRANSISTOR REC SW
LD755	164499		DIODE	Q512	161123		TRANSISTOR INVERTER
LD756	164499		DIODE	Q604	164353		TRANSISTOR BRAKE SW
				Q610	164353		TRANSISTOR START/STOP SW
LT50CF	182767		COIL 15UH	Q611	164353		TRANSISTOR TH CORRECT SW
OSC401	182765		CRYSTAL	Q612	161123		TRANSISTOR SP SW
				Q613	164353		TRANSISTOR VCYL HOLD
PG002	180910		CONNECTOR	Q614	161123		TRANSISTOR CAPSTAN PHASE SW
PG004	178530		CONNECTOR				
PG50CF	175160		CONNECTOR	Q618	164353		TRANSISTOR INVERTER
PG207	180911		CONNECTOR	Q619	164353		TRANSISTOR 14V STABI SW
PG406L	182743		CONNECTOR	Q622	164353		TRANSISTOR V DRV INHIBIT



## REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
Q623	164353		TRANSISTOR FH CORRECT	R226	150181		RES CF 1/8W 5% 680R
Q752	161123		TRANSISTOR SHAPE	R228	151464		RES CF 1/8W 5% 1K
Q801	161123		TRANSISTOR RESET	R231	151445		RES CF 1/8W 5% 560R
Q802	164959		TRANSISTOR -30V REG	R232	151447		RES CF 1/8W 5% 2.7K
Q803	161123		TRANSISTOR BUFFER	R233	151482		RES CF 1/8W 5% 1.8K
Q852	180894		* IC CIRCUIT PROTECT	R237	151606		RES CF 1/8W 5% 3.9K
Q921	178064		TRANSISTOR PB MONITOR CUT SW	R238	155423		RES CF 1/8W 5% 560K
				R240	150181		RES CF 1/8W 5% 680R
				R241	151436		RES CF 1/8W 5% 5.6K
R51CF	158351		RES CCF 1/8W 5% 100K	R245	150181		RES CF 1/8W 5% 680R
R51G	158432		RES CCF 1/8W 5% 1K	R251	151420		RES CF 1/8W 5% 2.2K
R52CF	158351		RES CCF 1/8W 5% 100K	R252	173976	*	RES CF 1/8W 5% 33R
R53CF	158260		RES CCF 1/8W 5% 47K	R254	151464		RES CF 1/8W 5% 1K
R54CF	158351		RES CCF 1/8W 5% 100K	R255	155435		RES CF 1/8W 5% 1.2K
R55CF	158260		RES CCF 1/8W 5% 47K	R256	151464		RES CF 1/8W 5% 1K
R56CF	155262		RES CCF 1/8W 5% 12K	R257	151447		RES CF 1/8W 5% 2.7K
R56G	155981		RES CCF 1/8W 5% 15K	R258	150181		RES CF 1/8W 5% 680R
R57CF	155981		RES CCF 1/8W 5% 15K	R259	151463		RES CF 1/8W 5% 4.7K
R57G	155005		RES CCF 1/8W 5% 5.6K	R260	155011		RES CF 1/8W 5% 1.5K
R58CF	155011		RES CCF 1/8W 5% 1.5K	R263	151464		RES CF 1/8W 5% 1K
R58G	155154		RES CCF 1/8W 5% 39K	R264	151435		RES CF 1/8W 5% 6.8K
R59CF	158428		RES CCF 1/8W 5% 100R	R265	151453		RES CF 1/8W 5% 820R
R59G	155008		RES CCF 1/8W 5% 27K	R271	160672		RES CF 1/8W 5% 22R
R60CF	158432		RES CCF 1/8W 5% 1K	R272	151463		RES CF 1/8W 5% 4.7K
R60G	155009		RES CCF 1/8W 5% 2.2K	R276	151464		RES CF 1/8W 5% 1K
R61CF	158357		RES CCF 1/8W 5% 6.8K	R277	151539		RES CF 1/8W 5% 10K
R61G	155146		RES CCF 1/8W 5% 10K	R279	150181		RES CF 1/8W 5% 680R
R62CF	158357		RES CCF 1/8W 5% 6.8K	R280	151434		RES CF 1/8W 5% 3.3K
R62G	155142		RES CCF 1/8W 5% 220R	R281	151436		RES CF 1/8W 5% 5.6K
R63CF	155262		RES CCF 1/8W 5% 12K	R282	151443		RES CF 1/8W 5% 22K
R63G	158347		RES CCF 1/8W 5% 1M	R283	151443		RES CF 1/8W 5% 22K
R64CF	155981		RES CCF 1/8W 5% 15K	R284	151420		RES CF 1/8W 5% 2.2K
R64G	155137		RES CCF 1/8W 5% 560R	R285	151464		RES CF 1/8W 5% 1K
R65CF	155498		RES CCF 1/8W 5% 680R	R286	155011		RES CF 1/8W 5% 1.5K
R65G	155146		RES CCF 1/8W 5% 10K	R287	164953		RES CF 1/8W 5% 27R
R66CF	158432		RES CCF 1/8W 5% 1K	R288	151439		RES CF 1/8W 5% 330R
R67CF	155160		RES CCF 1/8W 5% 470R	R290	155435		RES CF 1/8W 5% 1.2K
R68CF	155011		RES CCF 1/8W 5% 1.5K	R291	151420		RES CF 1/8W 5% 2.2K
R68G	155981		RES CCF 1/8W 5% 15K	R292	155435		RES CF 1/8W 5% 1.2K
R69G	158347		RES CCF 1/8W 5% 1M	R293	151434		RES CF 1/8W 5% 3.3K
R70CF	155137		RES CCF 1/8W 5% 560R	R294	155435		RES CF 1/8W 5% 1.2K
R70G	158432		RES CCF 1/8W 5% 1K	R295	151420		RES CF 1/8W 5% 2.2K
R71CF	155146		RES CCF 1/8W 5% 10K	R299	151482		RES CF 1/8W 5% 1.8K
R71G	158260		RES CCF 1/8W 5% 47K	R305	151464		RES CF 1/8W 5% 1K
R72CF	155981		RES CCF 1/8W 5% 15K	R308	151999		RES CF 1/8W 5% 27K
R72G	155146		RES CCF 1/8W 5% 10K	R309	151448		RES CF 1/8W 5% 180R
R73G	155146		RES CCF 1/8W 5% 10K	R310	151479		RES CF 1/8W 5% 100K
R74G	155146		RES CCF 1/8W 5% 10K	R401L	158437		RES CCF 1/8W 5% 10R
R75G	158432		RES CCF 1/8W 5% 1K	R401R	158437		RES CCF 1/8W 5% 10R
R76G	155142		RES CCF 1/8W 5% 220R	R402L	155146		RES CCF 1/8W 5% 10K
R77G	155142		RES CCF 1/8W 5% 220R	R402R	155146		RES CCF 1/8W 5% 10K
R78G	159030		RES CCF 1/8W 5% 120K	R403L	158346		RES CCF 1/8W 5% 56K
R79G	158432		RES CCF 1/8W 5% 1K	R403R	158346		RES CCF 1/8W 5% 56K
R80G	155013		RES CCF 1/8W 5% 180R	R405L	151445		RES CF 1/8W 5% 560R
R81G	158260		RES CCF 1/8W 5% 47K	R405R	151445		RES CF 1/8W 5% 560R
R82G	158260		RES CCF 1/8W 5% 47K	R406L	151420		RES CF 1/8W 5% 2.2K
R83G	158357		RES CCF 1/8W 5% 6.8K	R406R	151420		RES CF 1/8W 5% 2.2K
R84G	158260		RES CCF 1/8W 5% 47K	R407L	151459		RES CF 1/8W 5% 220K
R85G	155008		RES CCF 1/8W 5% 27K	R407R	151459		RES CF 1/8W 5% 220K
R86G	158260		RES CCF 1/8W 5% 47K	R408L	151473		RES CF 1/8W 5% 150R
R89G	158432		RES CCF 1/8W 5% 1K	R408R	151473		RES CF 1/8W 5% 150R
R90G	158432		RES CCF 1/8W 5% 1K	R409L	151436		RES CF 1/8W 5% 5.6K
R91G	158432		RES CCF 1/8W 5% 1K	R409R	151436		RES CF 1/8W 5% 5.6K
R92G	158367		RES CCF 1/8W 5% 22K	R410L	151436		RES CF 1/8W 5% 5.6K
R94G	155137		RES CCF 1/8W 5% 560R	R410R	151436		RES CF 1/8W 5% 5.6K
R95G	155146		RES CCF 1/8W 5% 10K	R411L	155142		RES CCF 1/8W 5% 220R
R96G	155146		RES CCF 1/8W 5% 10K	R411R	155142		RES CCF 1/8W 5% 220R
R97G	155009		RES CCF 1/8W 5% 2.2K	R414L	151434		RES CF 1/8W 5% 3.3K
R98G	155009		RES CCF 1/8W 5% 2.2K	R414R	151434		RES CF 1/8W 5% 3.3K
R99G	158357		RES CCF 1/8W 5% 6.8K	R415L	155144		RES CCF 1/8W 5% 18K
R100G	158367		RES CCF 1/8W 5% 22K	R415R	155144		RES CCF 1/8W 5% 18K
R101G	155146		RES CCF 1/8W 5% 10K	R416L	158444		RES CCF 1/8W 5% 2.2M
R102G	151485		RES CF 1/8W 5% 68K	R416R	158444		RES CCF 1/8W 5% 2.2M
R204	151475		RES CF 1/8W 5% 470R	R417	151480		RES CF 1/8W 5% 47K
R205	151420		RES CF 1/8W 5% 2.2K	R418	151463		RES CF 1/8W 5% 4.7K
R206	151464		RES CF 1/8W 5% 1K	R419L	151475		RES CF 1/8W 5% 470R
R207	151464		RES CF 1/8W 5% 1K	R419R	151475		RES CF 1/8W 5% 470R
R208	151420		RES CF 1/8W 5% 2.2K	R420L	155136		RES CCF 1/8W 5% 1.8K
R209	151420		RES CF 1/8W 5% 2.2K	R420R	155136		RES CCF 1/8W 5% 1.8K
R210	155435		RES CF 1/8W 5% 1.2K	R421	151436		RES CF 1/8W 5% 5.6K
R211	151606		RES CF 1/8W 5% 3.9K	R424	155146		RES CCF 1/8W 5% 10K
R212	151464		RES CF 1/8W 5% 1K	R431L	151435		RES CF 1/8W 5% 6.8K
R213	155435		RES CF 1/8W 5% 1.2K	R431R	151435		RES CF 1/8W 5% 6.8K
R214	151464		RES CF 1/8W 5% 1K	R432L	155011		RES CF 1/8W 5% 1.5K
R215	151464		RES CF 1/8W 5% 1K	R432R	155011		RES CF 1/8W 5% 1.5K
R216	155011		RES CF 1/8W 5% 1.5K	R433L	151447		RES CF 1/8W 5% 2.7K
R217	151463		RES CF 1/8W 5% 4.7K	R433R	151447		RES CF 1/8W 5% 2.7K
R218	155430		RES CF 1/8W 5% 120K	R434L	151478		RES CF 1/8W 5% 2K
R220	150181		RES CF 1/8W 5% 680R	R434R	151478		RES CF 1/8W 5% 2K
R221	151442		RES CF 1/8W 5% 220R	R435	151443		RES CF 1/8W 5% 22K
R223	151445		RES CF 1/8W 5% 560R	R436L	151436		RES CF 1/8W 5% 5.6K
R224	151539		RES CF 1/8W 5% 10K	R436R	151436		RES CF 1/8W 5% 5.6K

## REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
R437	151443		RES CF 1/8W 5% 22K	R634	157340		RES CF 1/8W 5% 1M
R438	151539		RES CF 1/8W 5% 10K	R635	151539		RES CF 1/8W 5% 10K
R440L	151453		RES CF 1/8W 5% 820R	R636	151475		RES CF 1/8W 5% 470R
R440R	151453		RES CF 1/8W 5% 820R	R637	151466		RES CF 1/8W 5% 330K
R441L	151447		RES CF 1/8W 5% 2.7K	R638	151451		RES CF 1/8W 5% 270K
R441R	151447		RES CF 1/8W 5% 2.7K	R639	164889		RES CF 1/8W 5% 390K
R442L	151444		RES CF 1/8W 5% 39K	R640	155439		RES CF 1/8W 5% 680K
R442R	151444		RES CF 1/8W 5% 39K	R645	155011		RES CF 1/8W 5% 1.5K
R443	158432		RES CCF 1/8W 5% 1K	R646	151436		RES CF 1/8W 5% 5.6K
R444	158351		RES CCF 1/8W 5% 100K	R647	151485		RES CF 1/8W 5% 68K
R445L	155011		RES CCF 1/8W 5% 1.5K	R649	175754	*	RES CF 1/4W 5% 33R
R445R	155011		RES CCF 1/8W 5% 1.5K	R651	151459		RES CF 1/8W 5% 220K
R446	155005		RES CCF 1/8W 5% 5.6K	R652	151480		RES CF 1/8W 5% 47K
R447	151442		RES CF 1/8W 5% 220R	R653	151539		RES CF 1/8W 5% 10K
R448	148122	*	RES FUSE	R654	151441		RES CF 1/8W 5% 18K
R452	155008		RES CMF 1/8W 5% 2.7K	R655	151463		RES CF 1/8W 5% 4.7K
R453	158351		RES CCF 1/8W 5% 100K	R656	151434		RES CF 1/8W 5% 3.3K
R454	158260		RES CCF 1/8W 5% 47K	R657	160672		RES CF 1/8W 5% 22R
R455	158446		RES CCF 1/8W 5% 47K	R658	151448		RES CF 1/2W 5% 180R
R456L	158446		RES CCF 1/8W 5% 47K	R659	147492		RES CF 1/2W 5% 47R
R456R	158446		RES CCF 1/8W 5% 47K	R660	155451		RES CF 1/8W 5% 120R
R458	158432		RES CCF 1/8W 5% 1K	R661	151539	*	RES CF 1/8W 5% 10K
R459	158260		RES CCF 1/8W 5% 47K	R662	151539	*	RES CF 1/8W 5% 10K
R460	158442		RES CCF 1/8W 5% 10K	R663	151539	*	RES CF 1/8W 5% 10K
R461	158432		RES CCF 1/8W 5% 1K	R664	151485		RES CF 1/8W 5% 68K
R462	155142		RES CCF 1/8W 5% 220R	R666	151597		RES CF 1/8W 5% 150K
R463	158442		RES CCF 1/8W 5% 10K	R667	151678		RES CF 1/8W 5% 56K
R471	155005		RES CCF 1/8W 5% 5.6K	R668	151539		RES CF 1/8W 5% 10K
R472	151436		RES CF 1/8W 5% 5.6K	R671	151539		RES CF 1/8W 5% 10K
R473	158442		RES CCF 1/8W 5% 10K	R672	151539		RES CF 1/8W 5% 10K
R474	158442		RES CCF 1/8W 5% 10K	R673	151539		RES CF 1/8W 5% 10K
R475	151479		RES CF 1/8W 5% 100K	R674	151539		RES CF 1/8W 5% 10K
R477	158442		RES CCF 1/8W 5% 10K	R675	155430		RES CF 1/8W 5% 120K
R501	151539		RES CF 1/8W 5% 10K	R677	151443		RES CF 1/8W 5% 22K
R502	151539		RES CF 1/8W 5% 10K	R678	151539		RES CF 1/8W 5% 10K
R503	150202		RES CF 1/8W 5% 15K	R679	151597		RES CF 1/8W 5% 150K
R504	151434		RES CF 1/8W 5% 3.3K	R680	173969		RES CF 1/8W 5% 180K
R505	151475		RES CF 1/8W 5% 470R	R684	151465		RES CF 1/8W 5% 33K
R506	157340		RES CF 1/8W 5% 1M	R685	151480		RES CF 1/8W 5% 47K
R507	151433		RES CF 1/8W 5% 12K	R686	151443		RES CF 1/8W 5% 22K
R508	174394		RES CF 1/8W 5% 68R	R687	151999		RES CF 1/8W 5% 27K
R509	829075		RES CF 1/4W 5% 75R	R688	150202		RES CF 1/8W 5% 15K
R510L	150181		RES CF 1/8W 5% 680R	R689	151480		RES CF 1/8W 5% 47K
R510R	150181		RES CF 1/8W 5% 680R	R690	151478		RES CF 1/8W 5% 2K
R511	151442		RES CF 1/8W 5% 220R	R691	151479		RES CF 1/8W 5% 100K
R512	151439		RES CF 1/8W 5% 330R	R692	151480		RES CF 1/8W 5% 47K
R514	155451		RES CF 1/8W 5% 120R	R693	151606		RES CF 1/8W 5% 3.9K
R517	151463		RES CF 1/8W 5% 4.7K	R694	151479		RES CF 1/8W 5% 100K
R520L	151433		RES CF 1/8W 5% 12K	R695	151539		RES CF 1/8W 5% 10K
R520R	151433		RES CF 1/8W 5% 12K	R696	151539		RES CF 1/8W 5% 10K
R521	151597		RES CF 1/8W 5% 150K	R697	151539		RES CF 1/8W 5% 10K
R522	151479		RES CF 1/8W 5% 100K	R698	151445		RES CF 1/8W 5% 560R
R523	151464		RES CF 1/8W 5% 1K	R743	151434		RES CF 1/8W 5% 3.3K
R528	151443		RES CF 1/8W 5% 22K	R744	151434		RES CF 1/8W 5% 3.3K
R529	151539		RES CF 1/8W 5% 10K	R747	151539		RES CF 1/8W 5% 10K
R530	151539		RES CF 1/8W 5% 10K	R748	151478		RES CF 1/8W 5% 2K
R531	151539		RES CF 1/8W 5% 10K	R749	151478		RES CF 1/8W 5% 2K
R532	151479		RES CF 1/8W 5% 100K	R750	151456		RES CF 1/8W 5% 390R
R535L	151479		RES CF 1/8W 5% 100K	R751	151480		RES CF 1/8W 5% 47K
R535R	151479		RES CF 1/8W 5% 100K	R752	151479		RES CF 1/8W 5% 100K
R545	151480		RES CF 1/8W 5% 47K	R753	151443		RES CF 1/8W 5% 22K
R548	155011		RES CF 1/8W 5% 1.5K	R754	149607		RES CF 1/8W 5% 100R
R549	151479		RES CF 1/8W 5% 100K	R755	149607		RES CF 1/8W 5% 100R
R550	151453		RES CF 1/8W 5% 820R	R756	151539		RES CF 1/8W 5% 10K
R552	155435		RES CF 1/8W 5% 1.2K	R757	151606		RES CF 1/8W 5% 3.9K
R553	151463		RES CF 1/8W 5% 4.7K	R758	151539		RES CF 1/8W 5% 10K
R554	151463		RES CF 1/8W 5% 4.7K	R759	151436		RES CF 1/8W 5% 5.6K
R581	151465		RES CF 1/8W 5% 33K	R760	151436		RES CF 1/8W 5% 5.6K
R582	151443		RES CF 1/8W 5% 22K	R761	151453		RES CF 1/8W 5% 820R
R601	151539		RES CF 1/8W 5% 10K	R762	151453		RES CF 1/8W 5% 820R
R603	155451		RES CF 1/8W 5% 120R	R763	151453		RES CF 1/8W 5% 820R
R605	150202		RES CF 1/8W 5% 15K	R764	151434		RES CF 1/8W 5% 3.3K
R606	155435		RES CF 1/8W 5% 1.2K	R765	151434		RES CF 1/8W 5% 3.3K
R607	151463		RES CF 1/8W 5% 4.7K	R766	151480		RES CF 1/8W 5% 47K
R608	151606		RES CF 1/8W 5% 3.9K	R767	151434		RES CF 1/8W 5% 3.3K
R609	151444		RES CF 1/8W 5% 39K	R768	155011		RES CF 1/8W 5% 1.5K
R610	151479		RES CF 1/8W 5% 100K	R769	151443		RES CF 1/8W 5% 22K
R611	155423		RES CF 1/8W 5% 560K	R770	151448		RES CF 1/8W 5% 180R
R612	153177		RES CF 1/8W 5% 470K	R771	151475		RES CF 1/8W 5% 470R
R614	151479		RES CF 1/8W 5% 100K	R772	151475		RES CF 1/8W 5% 470R
R615	151479		RES CF 1/8W 5% 100K	R773	151475		RES CF 1/8W 5% 470R
R616	151480		RES CF 1/8W 5% 47K	R774	151475		RES CF 1/8W 5% 470R
R617	151444		RES CF 1/8W 5% 39K	R775	151475		RES CF 1/8W 5% 470R
R619	151465		RES CF 1/8W 5% 33K	R776	157340		RES CF 1/8W 5% 1M
R620	151444		RES CF 1/8W 5% 39K	R777	829547		RES CF 1/4W 5% 4.7M
R622	151464		RES CF 1/8W 5% 1K	R778	151465		RES CF 1/8W 5% 33K
R624	151444		RES CF 1/8W 5% 39K	R779	151441		RES CF 1/8W 5% 18K
R625	149607		RES CF 1/8W 5% 100R	R780	151441		RES CF 1/8W 5% 18K
R626	151444		RES CF 1/8W 5% 39K	R781	151441		RES CF 1/8W 5% 18K
R629	151465		RES CF 1/8W 5% 33K	R782	151441		RES CF 1/8W 5% 18K
R632	151480		RES CF 1/8W 5% 47K	R783	151600		RES CF 1/8W 5% 82K
R633	151464		RES CF 1/8W 5% 1K	R784	151600		RES CF 1/8W 5% 82K

## REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
R785	151600		RES CF 1/8W 5% 82K	RT50CF	178461		RES CONTROL 1H DELAY CHROMA LEVEL
R786	151600		RES CF 1/8W 5% 82K	RT52G	159933		RES CONTROL OSD HORIZONTAL CALIBRATION
R787	151539		RES CF 1/8W 5% 10K	RT93G	158494		RES CONTROL AFC
R788	151539		RES CF 1/8W 5% 10K	RT201	177601		RES CONTROL CHROMA CANCELER
R789	151436		RES CF 1/8W 5% 5.6K	RT202	178458		RES CONTROL 1H DELAY LINE OUTPUT LEVEL
R790	151436		RES CF 1/8W 5% 5.6K	RT401L	178458		RES CONTROL LCH AUDIO PB GAIN
R791	151480		RES CF 1/8W 5% 47K	RT401R	178458		RES CONTROL RCH AUDIO PB GAIN
R792	151480		RES CF 1/8W 5% 47K	RT402L	178458		RES CONTROL LCH AUDIO REC LEVEL
R793	151480		RES CF 1/8W 5% 47K	RT402R	178458		RES CONTROL RCH AUDIO REC LEVEL
R794	151480		RES CF 1/8W 5% 47K	RT403L	177089		RES CONTROL LCH AUDIO BIAS LEVEL
R795	151442		RES CF 1/8W 5% 220R	RT403R	177089		RES CONTROL RCH AUDIO BIAS LEVEL
R796	151464		RES CF 1/8W 5% 1K	RT451	177085		RES CONTROL MPX INPUT LEVEL
R797	150202		RES CF 1/8W 5% 15K	RT601	177088		RES CONTROL PG SHIFTER
R798	151464		RES CF 1/8W 5% 1K	RT602	177089		RES CONTROL TRACKING PRESET
R799	151606		RES CF 1/8W 5% 3.9K	RT611	178458		RES CONTROL SLP SLOW FEED SPEED
R800	151606		RES CF 1/8W 5% 3.9K	RT612	178458		RES CONTROL SP SLOW FEED SPEED
R801	155430		RES CF 1/8W 5% 120K	RT801	157667		RES CONTROL STATION DETECT
R802	151444		RES CF 1/8W 5% 39K	RV751	156578		RES CONTROL TRACKING
R803	151420		RES CF 1/8W 5% 2.2K	S143	147281		SWITCH
R804	151478		RES CF 1/8W 5% 2K	S144	147281		SWITCH
R805	155435		RES CF 1/8W 5% 1.2K	S751	180870		SWITCH
R806	151441		RES CF 1/8W 5% 18K	S752	157666		SWITCH
R807	151464		RES CF 1/8W 5% 1K	S753	157666		SWITCH
R808	151478		RES CF 1/8W 5% 2K	S754	157666		SWITCH
R809	155011	*	RES CF 1/8W 5% 1.5K	S755	157666		SWITCH
R810	151435		RES CF 1/8W 5% 6.8K	S756	157666		SWITCH
R811	151475		RES CF 1/8W 5% 470R	S757	157666		SWITCH
R812	151433		RES CF 1/8W 5% 12K	S759	157666		SWITCH
R813	151465		RES CF 1/8W 5% 33K	S760	157666		SWITCH
R814	151441		RES CF 1/8W 5% 18K	S761	157666		SWITCH
R815	151441		RES CF 1/8W 5% 18K	S762	157666		SWITCH
R816	151443		RES CF 1/8W 5% 22K	S763	157666		SWITCH
R817	151463		RES CF 1/8W 5% 4.7K	S764	157666		SWITCH
R818	151442		RES CF 1/8W 5% 220R	S765	157666		SWITCH
R819	151443		RES CF 1/8W 5% 22K	S768	157666		SWITCH
R820	151464		RES CF 1/8W 5% 1K	S769	157666		SWITCH
R821	151443		RES CF 1/8W 5% 22K	S770	157666		SWITCH
R822	151539		RES CF 1/8W 5% 10K	S771	157666		SWITCH
R823	151436		RES CF 1/8W 5% 5.6K	S772	157666		SWITCH
R824	151443		RES CF 1/8W 5% 22K	S773	157666		SWITCH
R825	151464		RES CF 1/8W 5% 1K	S774	157666		SWITCH
R826	151433		RES CF 1/8W 5% 12K	S775	157666		SWITCH
R827	151443		RES CF 1/8W 5% 22K	S776	157666		SWITCH
R828	151433		RES CF 1/8W 5% 12K	S778	157666		SWITCH
R829	151443		RES CF 1/8W 5% 22K	S779	157666		SWITCH
R833	151443		RES CF 1/8W 5% 22K	S780	157666		SWITCH
R835	150429	*	RES FUSE	SW502	177668		SWITCH
R840	151463		RES CF 1/8W 5% 4.7K	T851	181179		* TRANSFORMER POWER
R841	149601		RES CF 1/8W 5% 56R	VR501	178066		RES CONTROL
R851	147980	*	RES CF 1W 10% 2.2M	X201	180899		CRYSTAL
R852	148116	*	RES FUSE	X751	161676		CRYSTAL 4MHZ
R854	155454		RES CF 1/8W 5% 3.3K	X752	156691		CRYSTAL 32KHZ
R901	151464		RES CF 1/8W 5% 1K	ZD431	181519		DIODE ZENER
R902	151606		RES CF 1/8W 5% 3.9K	ZD432	181523		DIODE ZENER
R903	151606		RES CF 1/8W 5% 3.9K	ZD451	182756		DIODE ZENER
R904	151465		RES CF 1/8W 5% 33K	ZD510	181178		DIODE ZENER
R907	151464		RES CF 1/8W 5% 1K	ZD601	181522		DIODE ZENER
R908	151539		RES CF 1/8W 5% 10K	ZD602	181523		DIODE ZENER
R909	151465		RES CF 1/8W 5% 33K	ZD603	181522		DIODE ZENER
R912	151434		RES CF 1/8W 5% 3.3K	ZD752	182754		DIODE ZENER
R913	151434		RES CF 1/8W 5% 3.3K	ZD753	181520		DIODE ZENER
R914	151464		RES CF 1/8W 5% 1K	ZD754	177118		DIODE ZENER
R915	151464		RES CF 1/8W 5% 1K	ZD755	181524		DIODE ZENER
R916	151420		RES CF 1/8W 5% 2.2K	ZD801	182755		DIODE ZENER
R917	151420		RES CF 1/8W 5% 2.2K	ZD802	180895		DIODE ZENER
R918	151463		RES CF 1/8W 5% 4.7K	ZD803	180896		DIODE ZENER
R919	151463		RES CF 1/8W 5% 4.7K	ZD804	180896		DIODE ZENER
R920	151463		RES CF 1/8W 5% 4.7K	ZD806	182753		DIODE ZENER
R921	151463		RES CF 1/8W 5% 4.7K	ZD901	181524		DIODE ZENER
R922	157340		RES CF 1/8W 5% 1M	ZD902	181524		DIODE ZENER
R923	151463		RES CF 1/8W 5% 4.7K				
R924	151463		RES CF 1/8W 5% 4.7K				
R938	151479		RES CF 1/8W 5% 100K				
R939	151479		RES CF 1/8W 5% 100K				
R942	829547		RES CF 1/4W 5% 4.7M				
R943	151464		RES CF 1/8W 5% 1K				
R944	151464		RES CF 1/8W 5% 1K				
R945	151480		RES CF 1/8W 5% 47K				
R947	151480		RES CF 1/8W 5% 47K				
R948	151480		RES CF 1/8W 5% 47K				
R950	151464		RES CF 1/8W 5% 1K				
R956	151463		RES CF 1/8W 5% 4.7K				
R957	151465		RES CF 1/8W 5% 33K				
R958	151465		RES CF 1/8W 5% 33K				
R971	151539		RES CF 1/8W 5% 10K				
R1601	151441		RES CF 1/8W 5% 18K				
R1602	151441		RES CF 1/8W 5% 18K				
R1603	151464		RES CF 1/8W 5% 1K				
R1606	151447		RES CF 1/8W 5% 2.7K				
R1607	151463		RES CF 1/8W 5% 4.7K				
R1608	151479		RES CF 1/8W 5% 100K				
R1610	151479		RES CF 1/8W 5% 100K				

## REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
<b>MECHANICAL ASSEMBLY</b>							
<b>NOTE: SOME PARTS WITH ITEM NUMBERS ON EXPLODED VIEWS MAY NOT BE AVAILABLE SEPARATELY, OR MAY BE AVAILABLE ONLY AS PART OF AN ASSEMBLY.</b>							
101	182647		COVER, TOP (BEFORE SN724...)	254	164087		BASE
101	183193		COVER, TOP (AFTER SN724...)	255	160307		COLLAR
103	180916		COVER, BOTTOM	256	177204		SPRING
104			NON-STOCK PART	257	182865		HOLDER, DISPLAY
105			NON-STOCK PART	258	177198		SPRING
106	182001		BAND	259	177201		WASHER
107	181877		PANEL, FRONT ASSEMBLY (BEFORE SN724...)	260	182709		‡ CIRCUIT, PREAMP/HEAD SW
107	183204		PANEL, FRONT ASSEMBLY (AFTER SN724...)	261	158196		BASE
108	181878		DOOR, CONTROL	266	177205		SWITCH
109	182733		DOOR, CASSETTE	301	180935		PLATE, CLUTCH
110			NON-STOCK PART	302	157053		BELT
111			NON-STOCK PART	303	181543		SLIDER, BRAKE
112	182734		KNOB	304	160346		SLIDER
113	181879		HOLDER	305	156676		SPRING
114	180922		STUD	306	177207		GEAR
115	160725		RIVET	307	156675		ARM
116			NON-STOCK PART	311	180937		* MOTOR, LOADING
117	156759		* CONNECTOR, AC	312	163879		BELT
118	181880		PANEL, AC	313	177208		BELT
119	163864		HOLDER, FUSE	314	177209		FLYWHEEL
120	181881		HOLDER	315	157090		WASHER
121	152129		RIVET, NYLON 3MMD	316	160347		WASHER
122	181882		HOLDER	317	163895		BELT
123	181883		HOLDER	318	163896		BELT
124	180926		‡ CONVERTER, RF	319	164091		PLATE
125	180827		CABLE	320	157067		PULLEY
126	181884		‡ CIRCUIT, TUNER/IF/DEMODULATOR	321	156798		WASHER
127	182741		PLATE, JACK	322	157053		BELT
128	181885		TERMINAL, REAR ASSEMBLY	401	180938		HOLDER
129	163942		* CABLE, POWER	402	163881		BRACKET
132			NON-STOCK PART	403	161684		BRACKET, RIGHT
135			NON-STOCK PART	404	177413		HOLDER
152			NON-STOCK PART	405	161686		ROLLER
153	163868		BRACKET	406	161687		ROLLER
154	181541		BRACKET	407	161688		ROLLER
155	181542		BRACKET	408	177414		ARM
201			NON-STOCK PART	409	161690		SPRING
202	177192		REEL, SUPPLY TABLE	410	177212		ARM
203	177193		REEL, TAKE-UP TABLE	411	161692		SPRING
204	181886		HOLDER	412	181888		BRACKET
206	156781		WASHER	413			NON-STOCK PART
207	156798		WASHER	415	161696		WASHER
208	157026		ARM, BRAKE	416	161697		E-RING
209	161663		ARM	417	177214		GEAR
210	157028		BRAKE, LEFT	418	177215		ARM
211	162989		BRAKE, RIGHT	419	161700		HOLDER
212	161680		SPRING	420	177216		ARM
213	164086		SPRING	421	177217		ARM
214	180092		BAND, ASSEMBLY	422	161703		SPRING
216	177252		ARM	423	177218		GEAR (L)
217	180931		ARM	424	177415		PLATE
218	157034		LINK, LOADING/RIGHT	425	177256		HOLDER
219	157035		LINK, LOADING/LEFT	426	177219		SHAFT
220	160019		BASE, GUIDE ROLLER (IN)	427	177220		ARM
221	181887		BASE, GUIDE ROLLER	428	176942		SPRING
224	160022		ROLLER, GUIDE	429	177221		GEAR
226	161665		PLATE	430	163969		HOLDER
228			NON-STOCK PART	501	180940		‡ HEAD, UPPER CYLINDER
230	147123		SPRING	502	180959		‡ MOTOR, LOWER CYLINDER
231	161666		ARM	503	180095		BRUSH
232	177195		‡ HEAD, FULL ERASE	901	156810		SCREW, 3MMD X 10MM
233	156666		SPRING	902	179446		SCREW
234	178442		‡ HEAD, AUDIO CONTROL	903	152223		SCREW, 3MMD X 6MM
235	160344		SPRING	904	152115		SCREW, 3MMD X 8MM
236	156770		WASHER	905	160052		SCREW, 4MMD X 8MM
237	163871		BRAKE	906	152222		SCREW, 3MMD X 13MM
238	156771		SPRING	950	160053		SCREW
239	182888		* MOTOR, CAPSTAN	951	152115		SCREW, 3MMD X 8MM
240	161264		ARM, RECORD PREVENTION	952	152118		SCREW, 3MMD X 8MM
241	180933		SWITCH	953	177232		SCREW
242	156772		WASHER	954	152108		SCREW, 3MMD X 8MM
243	157046		ARM	955	152115		SCREW, 3MMD X 8MM
244	181203		ROLLER, PRESSURE	956	152115		SCREW, 3MMD X 8MM
246	157047		SPRING	958	152115		SCREW, 3MMD X 8MM
247	177199		SCREW	959	156746		SCREW, 3MMD X 5.2MM
248	181204		RES DEW SENSOR	960	152118		SCREW, 3MMD X 8MM
250	160027		COLLAR	961	157769		WASHER
251	177203		GUIDE	962	152345		SCREW, 3MMD X 12MM
				963	153760		NUT, 3MMD
				964	156787		SCREW, 2MMD X 3MM
				965	153692		SCREW, 3MMD X 8MM
				966	157095		SCREW
				967	156789		SCREW, 3MMD X 1.4MM
				968	153760		NUT, 3MMD
				969	152118		SCREW, 3MMD X 8MM
				970	152115		SCREW, 3MMD X 8MM
				971	152115		SCREW, 3MMD X 8MM
				972	152342		SCREW, 2.6MMD X 12MM
				973	152116		SCREW, 2.6MMD X 4MM
				974	156783		SCREW, 3MMD X 8MM
				975	156810		SCREW, 3MMD X 10MM
				976	156784		SCREW, 3MMD X 8MM

**REPLACEMENT PARTS (Continued)**

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
977	152115		SCREW, 3MMD X 8MM
979	152118		SCREW, 3MMD X 8MM
980	152065		SCREW, 3MMD X 6MM
983	161674		SCREW, 3MMD X 3MM
984	152223		SCREW, 3MMD X 6MM
985	152067		SCREW
986	160054		SCREW, 3MMD X 5MM
987	152065		SCREW, 3MMD X 6MM
988	152066		SCREW, 3MMD X 10MM
989	152322		SCREW, 2MMD X 3MM
990	152065		SCREW, 3MMD X 6MM
999	159537		SCREW

**REMOTE TRANSMITTER ASSEMBLY**

			TRANSMITTER, COMPLETE SEE INCLUDED ACCESSORIES
751	182887		CASE, UPPER
752	182886		BUTTON
753	182885		CIRCUIT, REMOTE CONTROL
754	182884		FILTER
755	182883		CASE, LOWER
756	182880		TERMINAL
757	182882		SCREW
758	182881		COVER, BATTERY

**SERVICING AIDS**

144386	• ADAPTER, TORQUE GAUGE, USE W/GAUGE MODEL NO. 600ATG
144600	• ADAPTER, TORQUE GAUGE, USE W/GAUGE MODEL NO. 651C-2
162007	• CABLE, 7 PIN EXTENSION
181446	• CABLE, 9 PIN EXTENSION
163988	• CABLE, 11 PIN EXTENSION
163987	• CABLE, 15 PIN EXTENSION WITH ONE BLUE CONDUCTOR
164036	• CABLE, 15 PIN EXTENSION WITH ONE RED CONDUCTOR
163986	• CABLE, 18 PIN EXTENSION
146918	• CHUCK, FOR 144396 GAUGE (MODEL 600ATG ONLY)
147002	• DRIVER, HEX KEY 3MM
146917	• DRIVER, RF ADJ TOOL
144396	• GAUGE, TORQUE W/ADAPTER

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
	162350		• GUIDE, FOR THREADING HEADWHEEL LEADS, 26MM LONG 10/PKG
	147001		• JIG, REEL TABLE HEIGHT
	156391		• METER, BACK TENSION TEST TAPE
	147003		• PLATE, HEIGHT REFERENCE
	153829		• SCREWDRIVER, JEWELER 0.8MMD SHAFT
	156504		• TAPE, MONOSCOPE/7KHZ (MONO)
	156503		• TAPE, COLOR BARS/1KHZ (MONO)
	156502		• TAPE, MULTIBURST/3KHZ (STEREO)
	156501		• TAPE, KIT OF 3 (MONOSCOPE, COLOR BARS & MULTIBURST)
	160651		• TAPE, FM AUDIO/400HZ (STEREO)
	144297		• WASHER, 3.2MM ID .5MM THICK REEL HEIGHT ADJUST 10/PKG
	152460		• WASHER, 3.2MM ID .25MM THICK REEL HEIGHT ADJUST 5/PKG

**CLEANING & LUBE MATERIALS**

147347	• GREASE, VCR MECHANISM
144589	• KIT, HEAD CLEANING
199076	• KIT, INCLUDES ALL LUBES & CLEANING MATERIALS
147468	• OIL, VCR MECHANISM
145870	• SOLVENT, VCR MECHANISM
145871	• WIPES, 5 X 8 1/2 INCH

**INCLUDED ACCESSORIES**

AH055	ADAPTER, 75 TO 300 OHM W/90 DEGREE PUSH-ON CONNECTOR
177233	BOOK, INSTRUCTION 2826760-1
	CABLE, 75 OHM COAX
	TERMINATED W/75 OHM CONNECTOR, & 300 OHM TWIN LEAD
177692	CABLE, 300 OHM TWIN LEAD
182879	‡ TRANSMITTER, IR REMOTE

1987 VPT395-S1  
SEP87



# Video Cassette Recorder Supplement Service Data



1987 VPT395-S1  
Additional Models Covered:  
VPT396  
VPT397  
VPT398

## RCA Corporation Consumer Electronics

### Technical Publications

P.O. Box 1976 | Indianapolis, Indiana 46206

## RCA Inc.

### Technical Publications

5575 Royalmount Avenue | Town of Mount-Royal | Quebec, Canada H4P 1J8

### Canada Stock Numbers:

Add prefix 66 to all stock numbers.

### Purpose of this Supplement:

This is a supplement to VCR Basic Service Data File No. 1987 VPT395. Additional models covered by this supplement are the VPT396/7/8. Only changes from the basic service data are covered. Schematics, adjustments, etc. that are not listed in this service data are the same as those in the VPT395 Basic Service Data.

## SERVICE DATA INDEX

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## SAFETY NOTICE

### USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by stars (★) on schematics and on the parts list in this Service Data and its bulletins. Before servicing this instrument, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in this Service Data.



## ELECTRICAL ADJUSTMENTS (Continued)

### AFC Adjustment

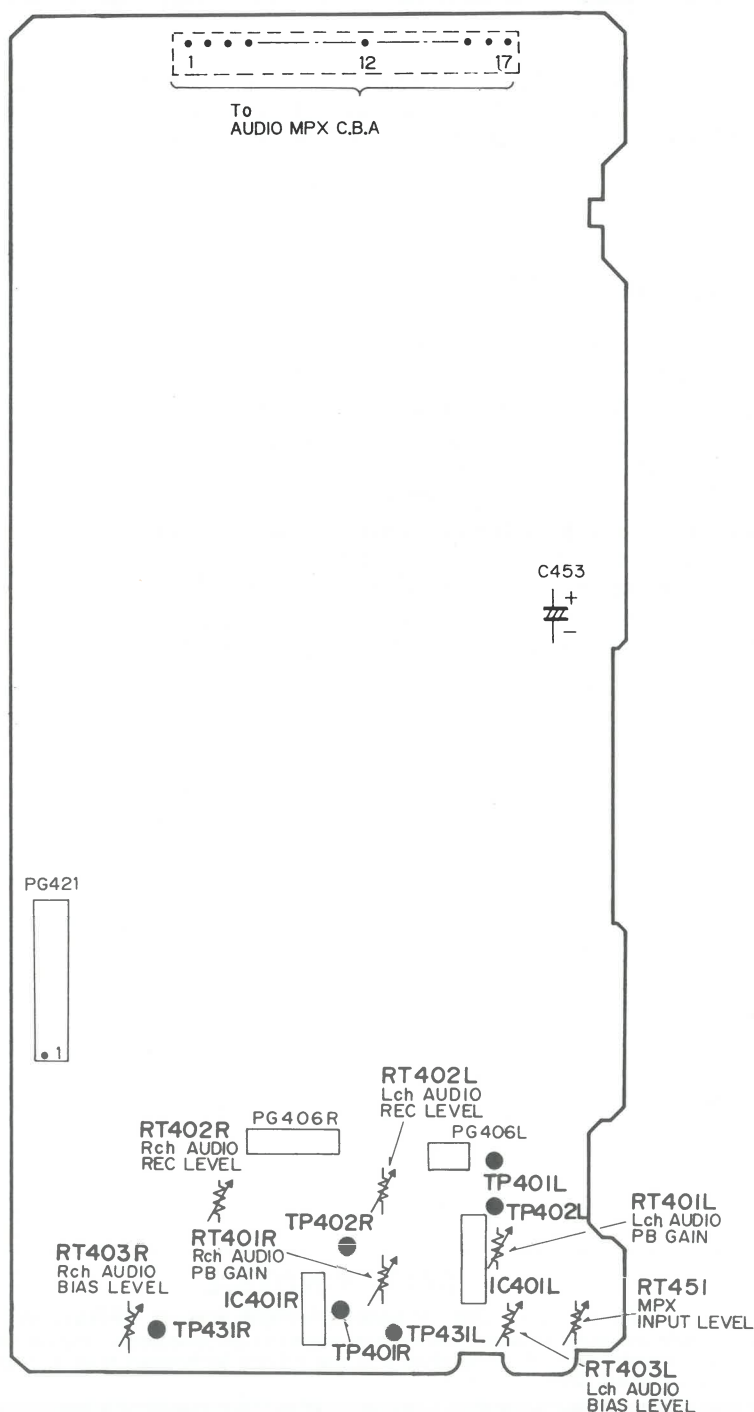
This adjustments the free-running horizontal frequency to 15.734kHz.

Test Point:	TP1G (H. SYNC)	Character Gen.
Adjust:	RT93G (AFC)	Character Gen.

1. Apply an NTSC color bar signal to the video input jack on the rear panel.
2. Set the VCR/TV select switch to "VCR" and the LINE/TUNER/SIMULCAST select switch to "LINE" position.
3. Connect a frequency counter to TP1G.
4. Adjust the ALC Control (RT93G) for  $15.734\text{kHz} \pm 0.2\text{kHz}$ .

**Note:** Set the input level switch of scope probe to 10:1.

### AUDIO/DOLBY NR PARTS LOCATION (Component Side)



### Audio/Dolby NR Parts Location (Component Side)

# 1987 VPT395-S1

SEP87

## REPLACEMENT PARTS

### BEFORE REPLACING PARTS, READ THE FOLLOWING:

**Approved Substitute Stock Numbers**—Before ordering stock numbers in the parts list, look for an approved substitute stock number in the current Price Schedule. This will minimize your service time and avoid ordering parts you already have in stock.

**PRODUCT SAFETY NOTE**—Components marked with a (\*) have special characteristics important to safety. Before replacing any of these components, read carefully the **PRODUCT SAFETY NOTICE** in the basic service data. Do not degrade the safety of the set through improper servicing. Although assemblies as a whole may not be marked with a (\*), replacement of assemblies with other assemblies not approved may result in a safety hazard.

**Warranty Status of Assemblies and Parts**—The warranty status of some assemblies and parts are indicated by one of the following Warranty Status Codes:

- Complete assembly not eligible for warranty exchange or replacement.
- ‡ Complete assembly eligible for warranty replacement with new or rebuilt unit.

All parts listed without a Warranty Status Code symbol are eligible for warranty replacement as discrete components.

Warranty replacement of cabinet parts requires prior approval.

Warranty Status and Specifications of assemblies and parts are subject to change without notice.

**\*NOTE:** When ordering components that are listed more than once in this parts list, always adhere to the serial number application guidelines given in the description column. If a serial number application guideline is not given, al-

ways select the component with a value, rating, other specifications, or identification marking(s) that match those of the corresponding component in the instrument you are servicing.

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
<b>VPT395-S1</b>			
<b>VPT396/397/398 SAME AS VPT395 PREVIOUSLY ISSUED IN 1987 VPT395 EXCEPT AS LISTED.</b>			
<b>COMPLETE ELECTRICAL ASSEMBLIES</b>			
	184804		CIRCUIT, IR RECEIVER
	182895		CIRCUIT, TIMER/INPUT KEY/ FUNCTION SW
<b>ELECTRICAL COMPONENTS</b>			
C52G	158323		CAP LYTC 47UF 10V
C66G	153188		CAP POLY 1500PF K 50V
C794	150737		CAPCD 270PF J 50V
C930	183149		CAPCD .01UF M 16V
C931	143871		CAPCD 100PF J 50V
CN725	187273		CONNECTOR & CABLE
Q509	184813		TRANSISTOR REC SW
R529	151436		RES CF 1/8W 5% 5.6K
R62G	155146		RES CCF 1/8W 5% 10K
R750	151439		RES CF 1/8W 5% 330R
R771	151456		RES CF 1/8W 5% 390R
X751	177246		CRYSTAL
ZD754	181524		DIODE ZENER
<b>MECHANICAL ASSEMBLY</b>			
<b>NOTE: SOME PARTS WITH ITEM NUMBERS ON EXPLODED VIEWS MAY NOT BE AVAILABLE SEPARATELY, OR MAY BE AVAILABLE ONLY AS PART OF AN ASSEMBLY.</b>			
101	182629		COVER, TOP (BEFORE SN723...) VPT396
101	183192		COVER, TOP (AFTER SN723...) VPT396

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
101	182644		COVER, TOP (BEFORE SN723...) VPT397
101	183194		COVER, TOP (AFTER SN723...) VPT397
101	182647		COVER, TOP (BEFORE SN723...) VPT398
101	183193		COVER, TOP (AFTER SN723...) VPT398
107	182872		PANEL, FRONT ASSEMBLY (BEFORE SN723...) VPT396
107	183205		PANEL, FRONT ASSEMBLY (AFTER SN723...) VPT396
107	182871		PANEL, FRONT ASSEMBLY (BEFORE SN723...) VPT397
107	183206		PANEL, FRONT ASSEMBLY (AFTER SN723...) VPT397
107	182870		PANEL, FRONT ASSEMBLY (BEFORE SN723...) VPT398
107	183207		PANEL, FRONT ASSEMBLY (AFTER SN723...) VPT398
108	182868		DOOR, CONTROL
112	180276		KNOB
120	182867		HOLDER
126	183033		CIRCUIT, TUNER/IF/ DEMODULATOR NON-STOCK PART
131	182876		HOLDER, LED
133			NON-STOCK PART
134			NON-STOCK PART
136			NON-STOCK PART
138	157094		WASHER
228	157038		ROLLER, GUIDE
239	182888		* MOTOR, CAPSTAN
311	182011		* MOTOR, LOADING
401	182869		HOLDER
412	183153		BRACKET
907	156741		SCREW, 3MMD X 6MM
<b>INCLUDED ACCESSORIES</b>			
			BOOK, INSTRUCTION 2826763-1 VPT396
			BOOK, INSTRUCTION 2826765-1 VPT397
			BOOK, INSTRUCTION 2826767-1 VPT398



# RCA/GE Video Cassette Recorder SERVICE INFORMATION

1987 VPT395



CONTAINS ADDITIONAL SERVICE DATA  
INFORMATION.

## Models VPT395/396/ 397/398

Thomson  
Consumer Electronics, Inc.  
Technical Publications  
P.O. Box 1976 | Indianapolis, Indiana 46206

Date: October 20, 1989

Subject: Intermittent audio muting during playback

**Symptom:** The intermittent audio muting only occurs for a **fraction of a second** during playback of a **known good cassette tape**. In most cases the servicer may not be able to confirm this complaint as it is dependent on the RF signal applied to the RF antenna input. Consumers using rabbit ears for an antenna are prone to see this problem when people walk in the room while the VCR is playing a cassette tape. In playback, the tuning control system of the VCR is still operating. This playback audio muting problem occurs because the tuning system is still operating during playback and for a variety of reasons the tuning control system can lose lock to the incoming station. If this happens, the Timer/Tuner  $\mu$ C will retune to the station and while doing so, the  $\mu$ C generates a channel-change-mute signal. The channel change mute signal is sent to the system control  $\mu$ C. The system control  $\mu$ C momentarily (**only for a fraction of a second**) mutes the audio when the retuning occurs, even when the VCR is in the playback mode.

**Corrective Action:** Realign the station detect oscillator frequency utilizing the procedure listed below and add a diode (STK #177092) to the copper side of the Main CBA as illustrated in the schematic and board view shown on the reverse side.

- Locate R825 on the Main CBA (use examples on back, as there are many version on the Main CBA) and connect the cathode of the diode to the lead of R825 (1K) going to the station detect pin of connector, PG826. **Caution: DO NOT connect the cathode to the lead of R825 going to IC IC801, pin 4.**
- Connect the anode to the PB control signal, at connector PG513, pin 19.

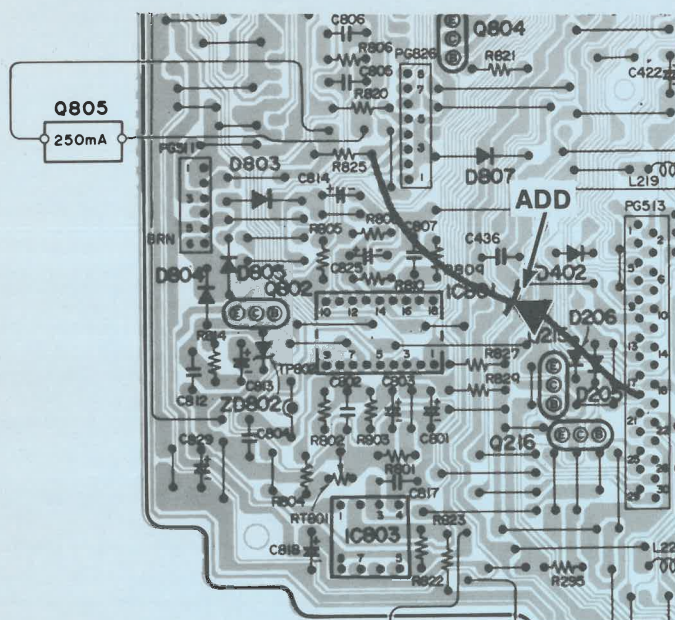
To more accurately adjust the frequency of the station detect oscillator and to insert the added diode, perform the following steps.

1. **Disconnect** any RF and/or video input cables
2. Turn on the VCR and select a **non-active** VHF channel
3. Connect a frequency counter to TP802
4. While capacitively grounding IC801, pin 5 with a 100 $\mu$ fd/16vdc capacitor (plus lead to pin 5, negative lead to pin 6), adjust RT801 to obtain a frequency of 15.7-kHz,  $\pm 0.1$ -kHz.
5. Install diode as shown on reverse side.

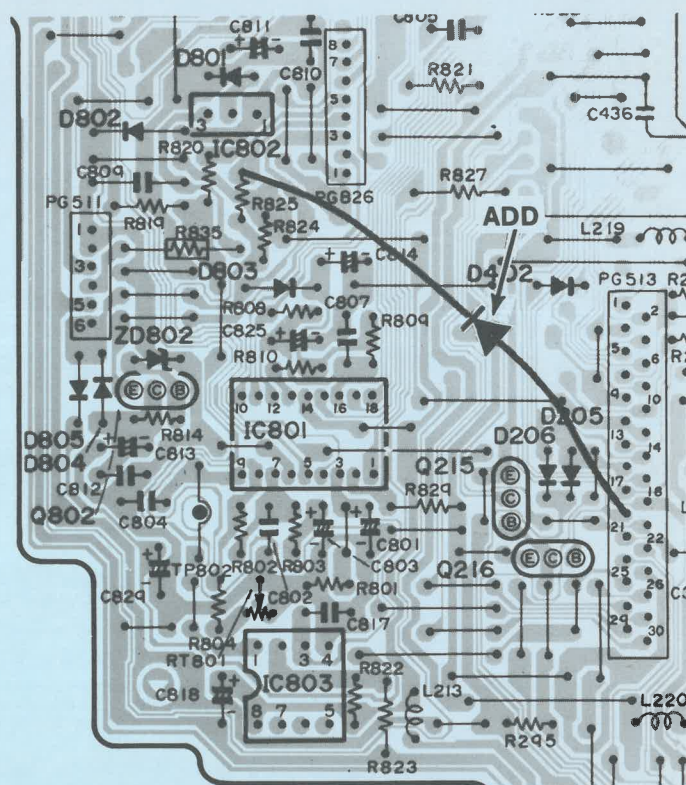
### Product Safety Information

Product safety information is contained in the appropriate RCA/GE Service Data covering models/chassis referenced in this bulletin. All specified Product Safety requirements and testing shall be complied with prior to returning equipment to the customer. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damages and may expose themselves and others to possible injury.

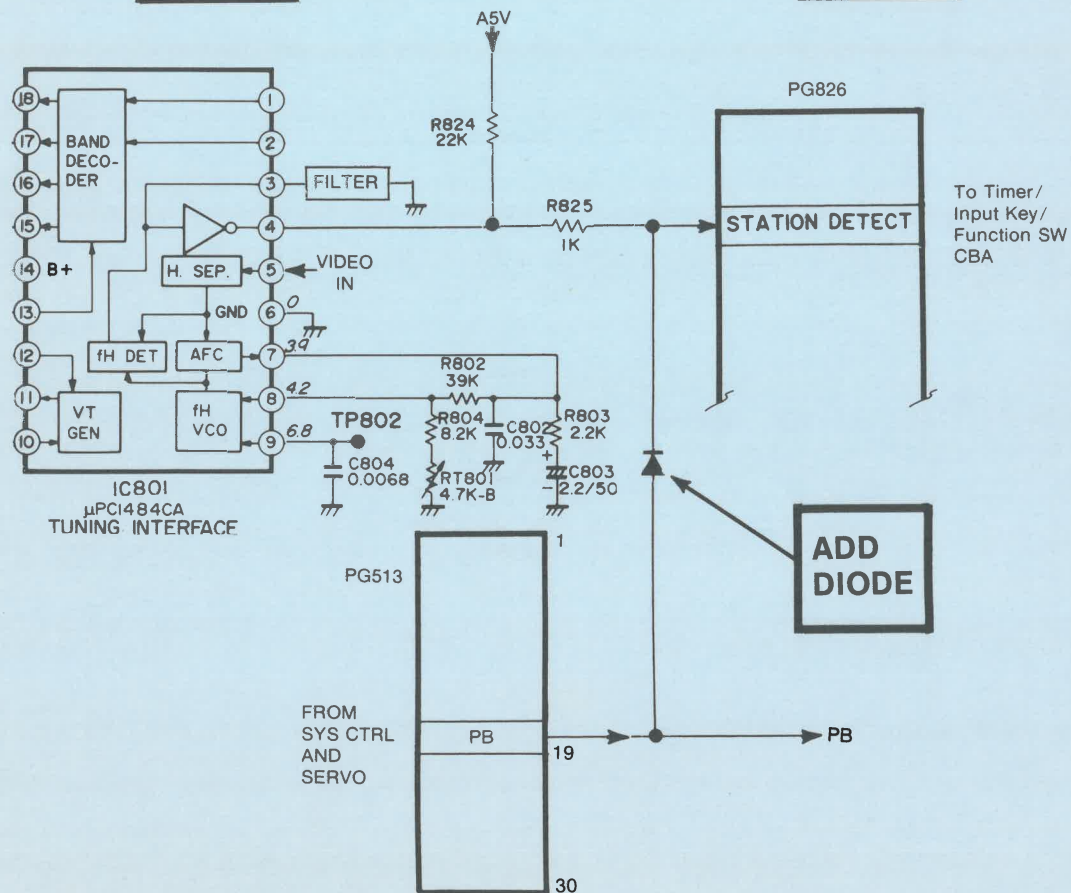
## EXAMPLES OF MAIN CBA's



VERSION 1



VERSION 2





# Video Cassette Recorder

## Basic Service Data **VHS**

**1987 VPT395**  
(Volume 2 of 2)

### RCA Corporation

### Consumer Electronics

#### Technical Publications

P.O. Box 1976 | Indianapolis, Indiana 46206

### RCA Inc.

#### Technical Publications

5575 Royalmount Avenue | Town of Mount-Royal | Quebec, Canada H4P 1J8

#### Canada Stock Numbers:

Add prefix **66** to all stock numbers.

## SERVICE DATA INDEX

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## Schematic/Circuit Board Index

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Capstan Motor .....		2-3	Pre Amp Head Switch .....	2-8	
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Character Generator .....	2-11	2-14	Remote Control (TX) .....	2-9	2-9
Chrominance .....	2-9		RF Modulator/Antenna Switch/VHF		
Comb Filter .....	2-11	2-13	Splitter .....	2-8	2-16
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Interconnect .....	2-12		UHF/VHF Tuner/Splitter .....	2-6	2-15
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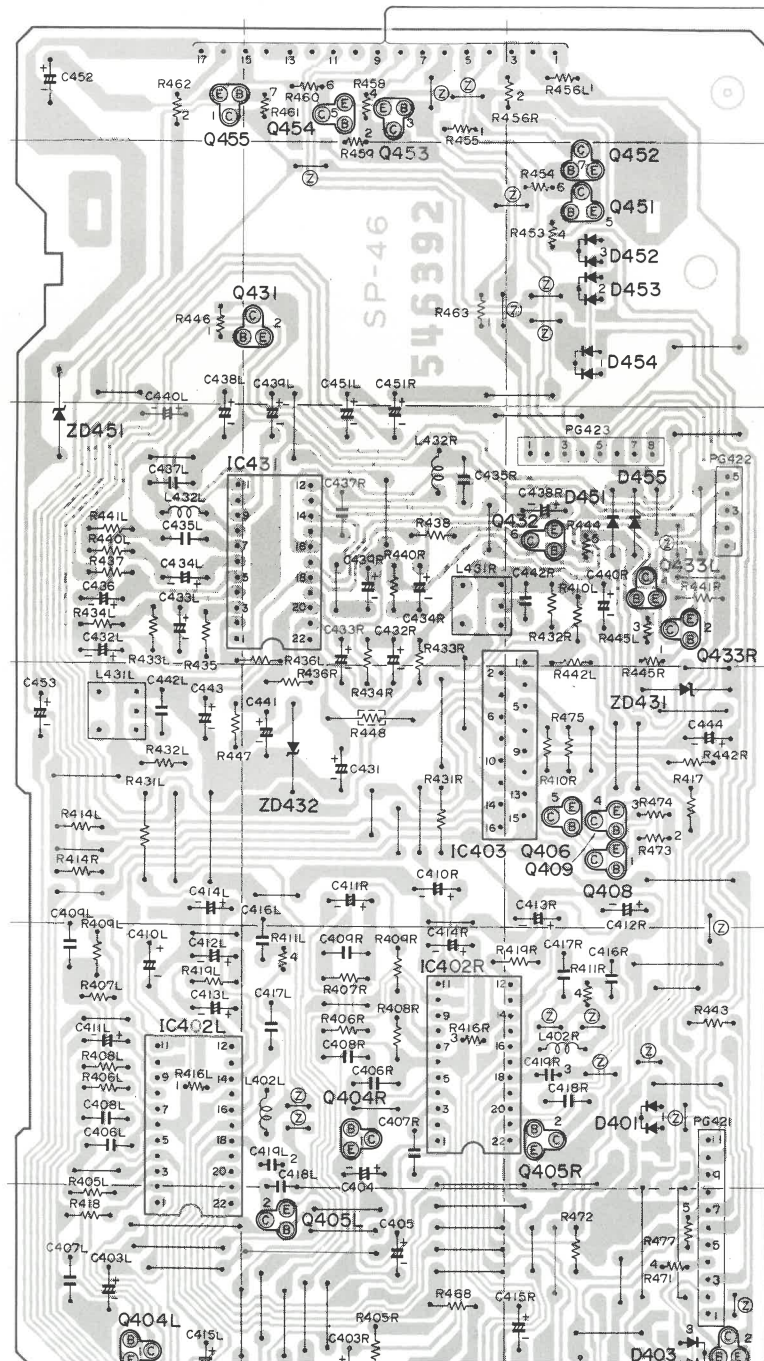
## SAFETY NOTICE

### USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by stars (\*) on schematics and on the parts list in this Service Data and its bulletins. Before servicing this instrument, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in this Service Data.



**AUDIO/DOLBY NR CIRCUIT BOARD (VPT396, 7, 8)  
(VPT395—LATE PRODUCTION)**



PG423	
1	SAP SET
2	SAP INDI.
3	STEREO INDI.
4	MONO
5	AUDIO (L)
6	GND
7	AUDIO (R)
8	DOLBY NR

To  
TIMER/  
INPUT KEY/  
FUNCTION SW  
CN723

PG422	
5	AUDIO (R)
4	AUDIO (L)
3	AUDIO (R)
2	AUDIO (L)
1	GND

To  
MAIN  
( U - V PLL  
( TUNING(I) / )  
REAR JACK )  
PG522  
VIA  
CN22

PG421	
11	SAP MUTE
10	MUTE (MAIN)
9	GND
8	I2V
7	LINE/TU/SIMUL
6	PB
5	LP
4	SLP
3	MUTE (MAIN)
2	B+ (OSC)
1	AUDIO (TUNER)

To  
MAIN  
( U-V PLL  
( TUNING(I)/  
( REAR JACK )  
PG52I VIA  
CN2I

PG 406L		PG 606L
3	REC (L)	2
2	GND	—
1	PB (L)	1

PG406R	PG
--------	----

PG406R		PG
5	AUDIO ERASE	6
4	GND	5
3	REC (R)	4
2	GND	—
1	PB (R)	3

---

PG410	
1	FULL ERASE

- ① GND
- ② AUDIO ( L )
- ③ AUDIO ( R )
- ④ FORCED MONO
- ⑤ STEREO INDI.
- ⑥ SAP INDI.
- ⑦ SAP SET
- ⑧ SAP SET
- ⑨ MUTE
- ⑩ —
- ⑪ SAP MUTE
- ⑫ —
- ⑬ SAP
- ⑭ SAP
- ⑮ qv
- ⑯ AUDIO
- ⑰ GND

To  
AUDIO MPX

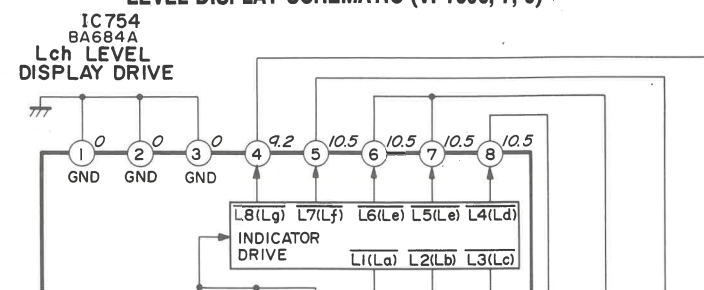
 ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SAFETY AND SERVICING PRECAUTIONS PUBLICATION.

**CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.**

**PRODUCT SAFETY NOTE**  
COMPONENTS WITH A (\*) HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA. DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE

### LEVEL DISPLAY SCHEMATIC (VPT396, 7, 8)



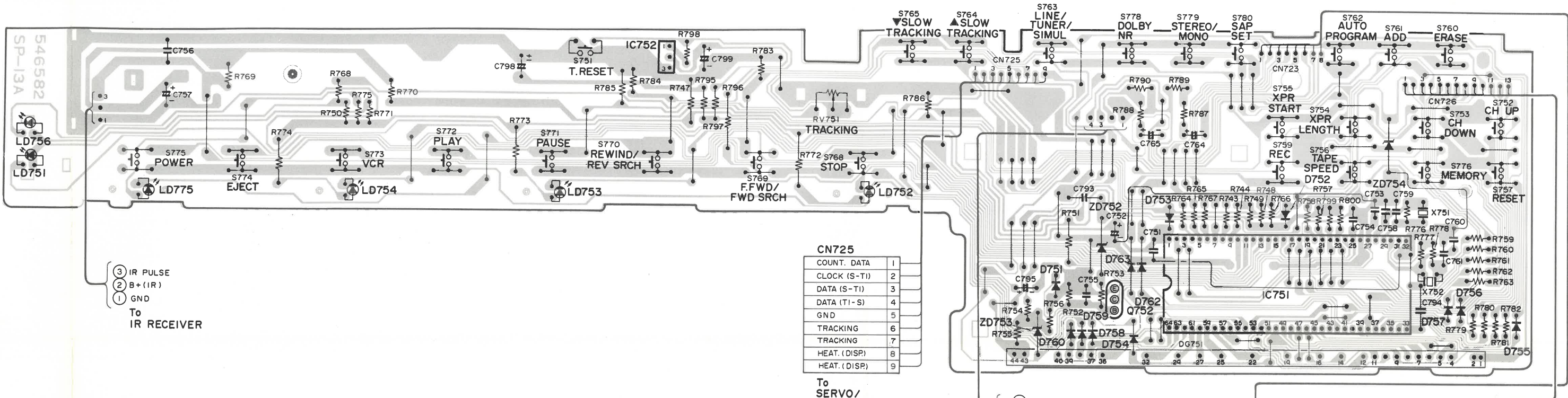


2-B2

2-B3

2-B4

TIMER/INPUT KEY/FUNCTION SWITCH CIRCUIT BOARD (VPT396, 7, 8)



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VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE

2-B2

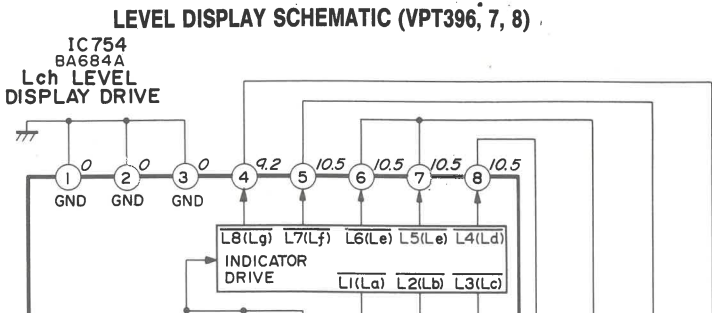
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2-B4

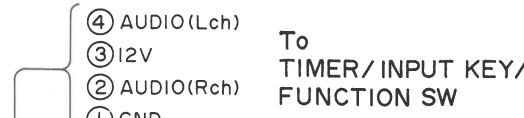
2-B6

2-B7

2-B8



LEVEL DISPLAY CIRCUIT BOARD (VPT396, 7, 8)







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CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE

To  
SERVO/  
SYS.CON.  
(SYS.CON.)  
PG925

HEAT. (DISP)	8
HEAT. (DISP)	9

- 4 AUDIO ( Lch )
- 3 12 v
- 2 AUDIO ( Rch )
- 1 GND

To  
LEVEL DISPLAY

CN723

1	SAP SET
2	SAP INDI.
3	STEREO INDI.
4	MONO
5	AUDIO (Lch)
6	GND
7	AUDIO (Rch)
8	DOLBY NR

To  
AUDIO/  
DOLBY NR  
PG423

CN726

1	CATV/NORM
2	A5.6V
3	A-30V
4	60Hz
5	STATION DET
6	AFT DOWN
7	CLOCK (TI-PLL)
8	DATA (TI-PLL)
9	ENABLE
10	I2V
11	CLOCK (TI-CG)
12	ENABLE (TI-CG)
13	DATA (TI-CG)

To  
MAIN  
(U-V PLL  
TUNING (1)/  
REAR JACK)  
PG826

2-B2

2-B3

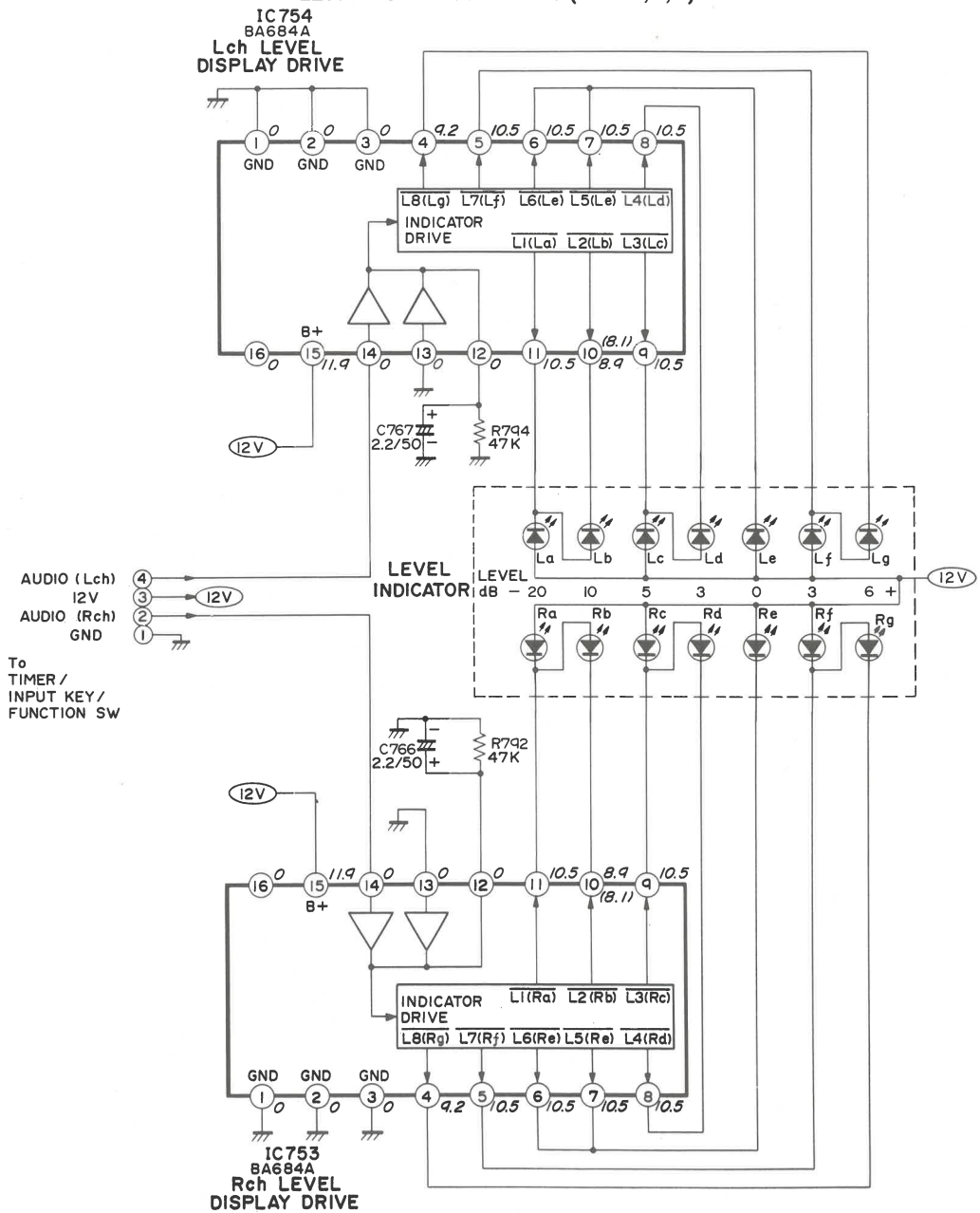
2-B4

2-B6

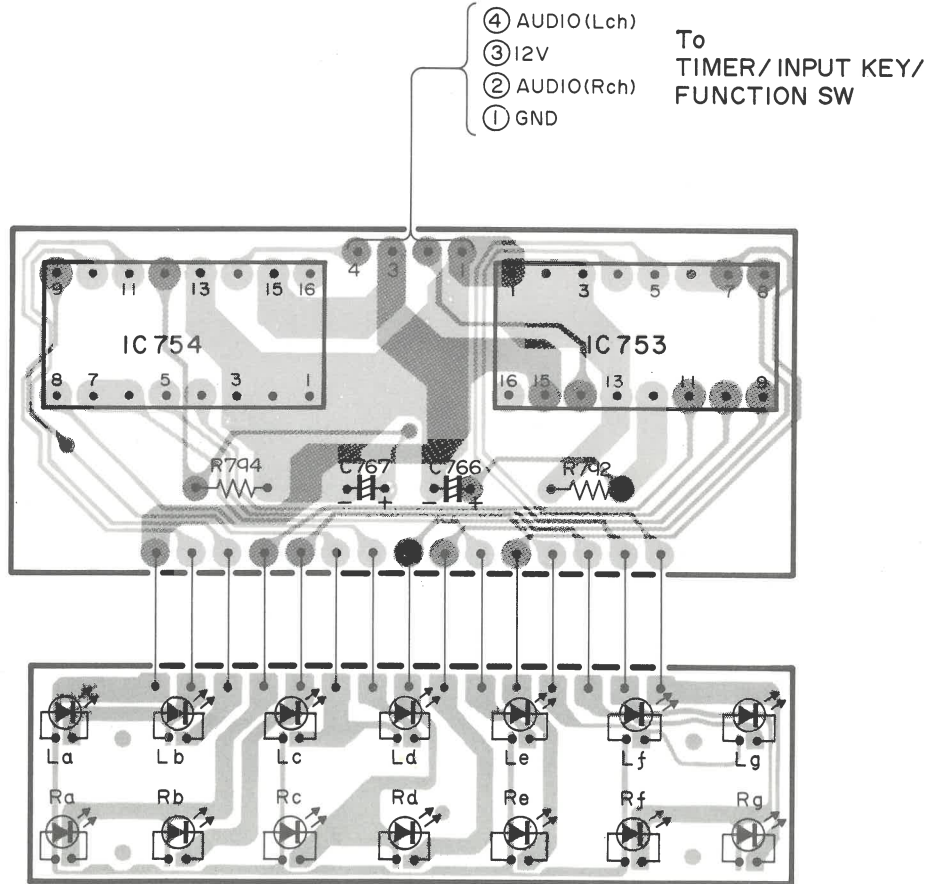
2-B7

2-B8

LEVEL DISPLAY SCHEMATIC (VPT396, 7, 8)




LEVEL DISPLAY CIRCUIT BOARD (VPT396, 7, 8)



2-B6

2-B7

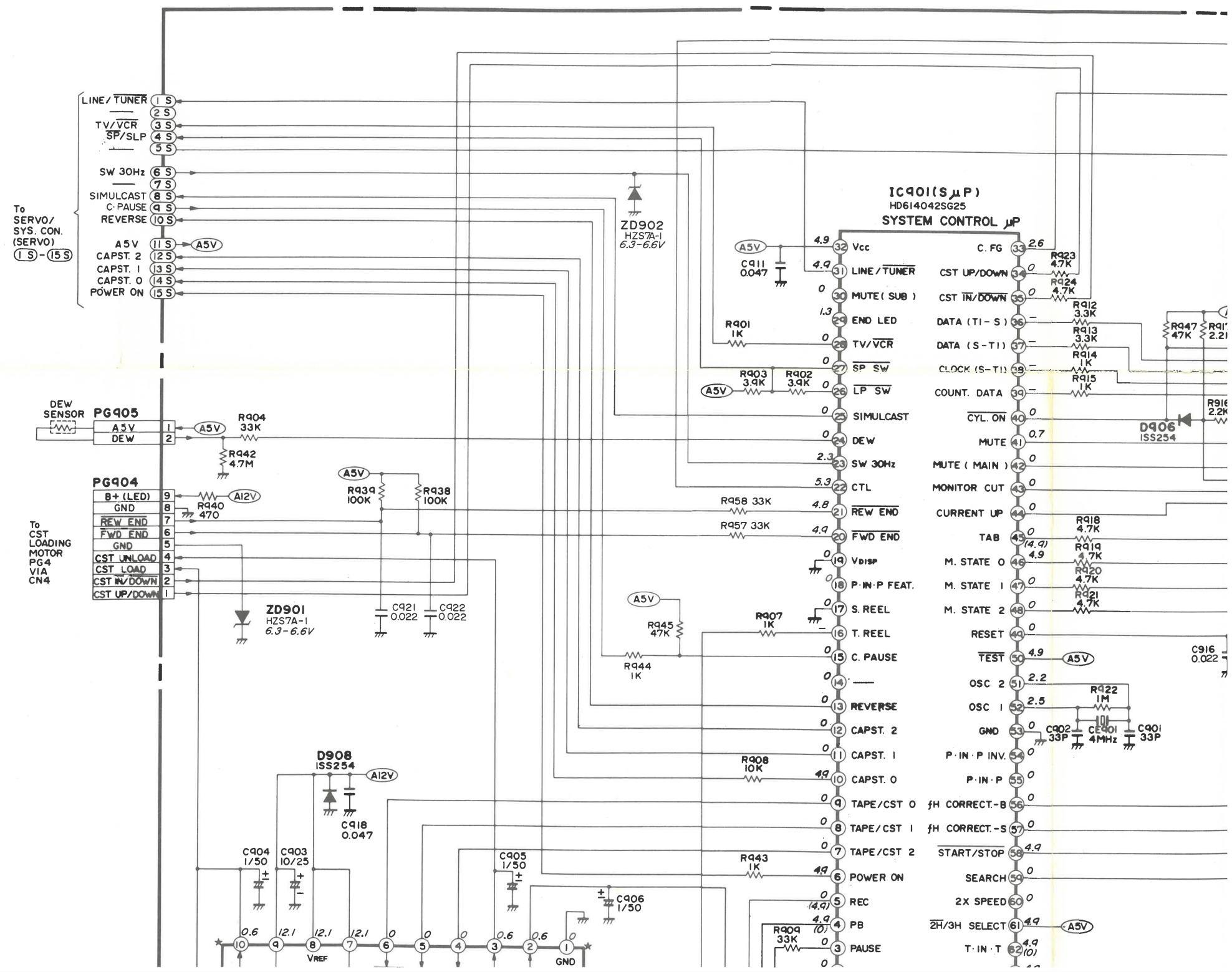
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VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE

### SYSTEM CONTROL SCHEMATIC



2-J1

**2-J5**

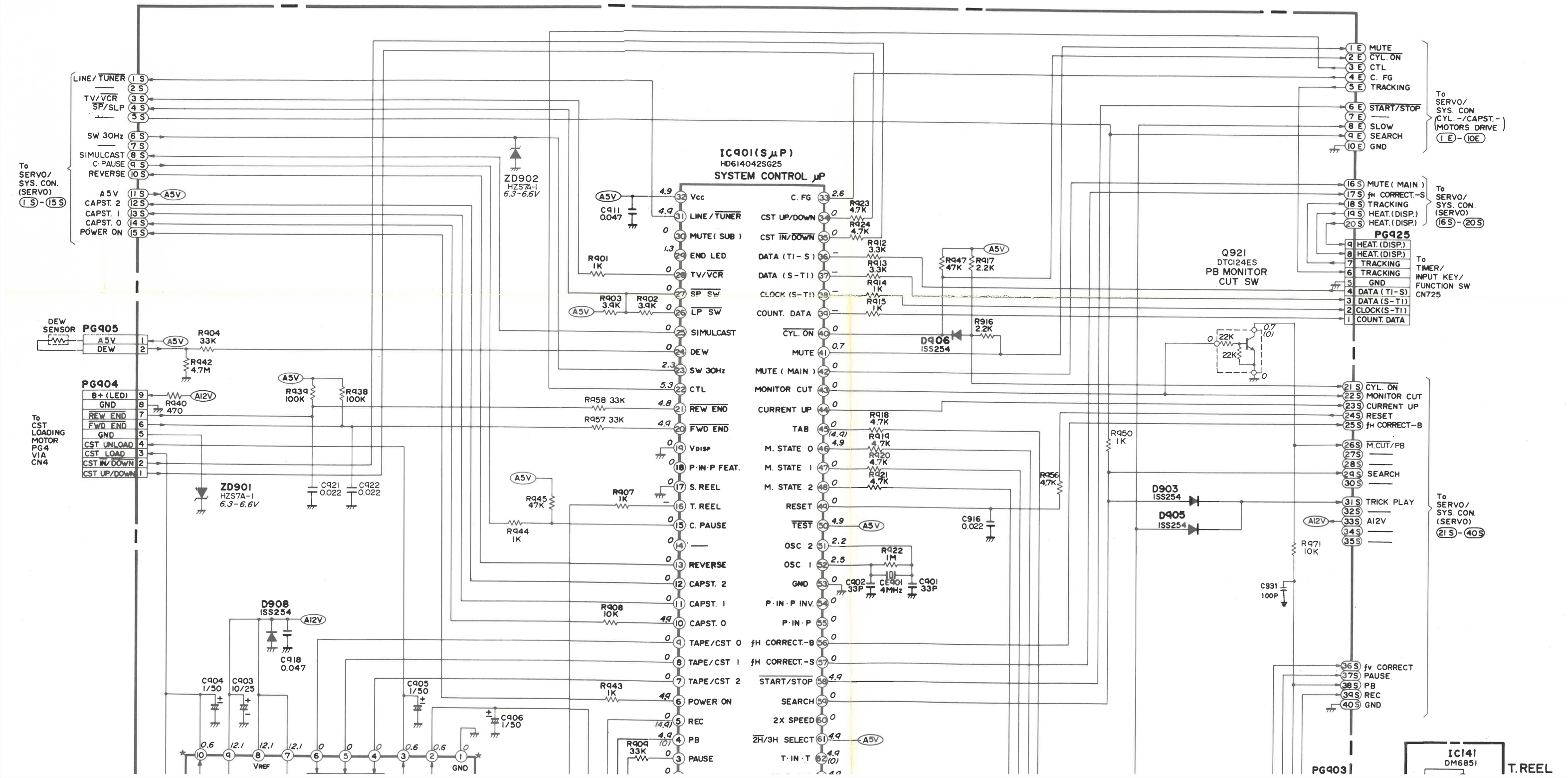


2-J2

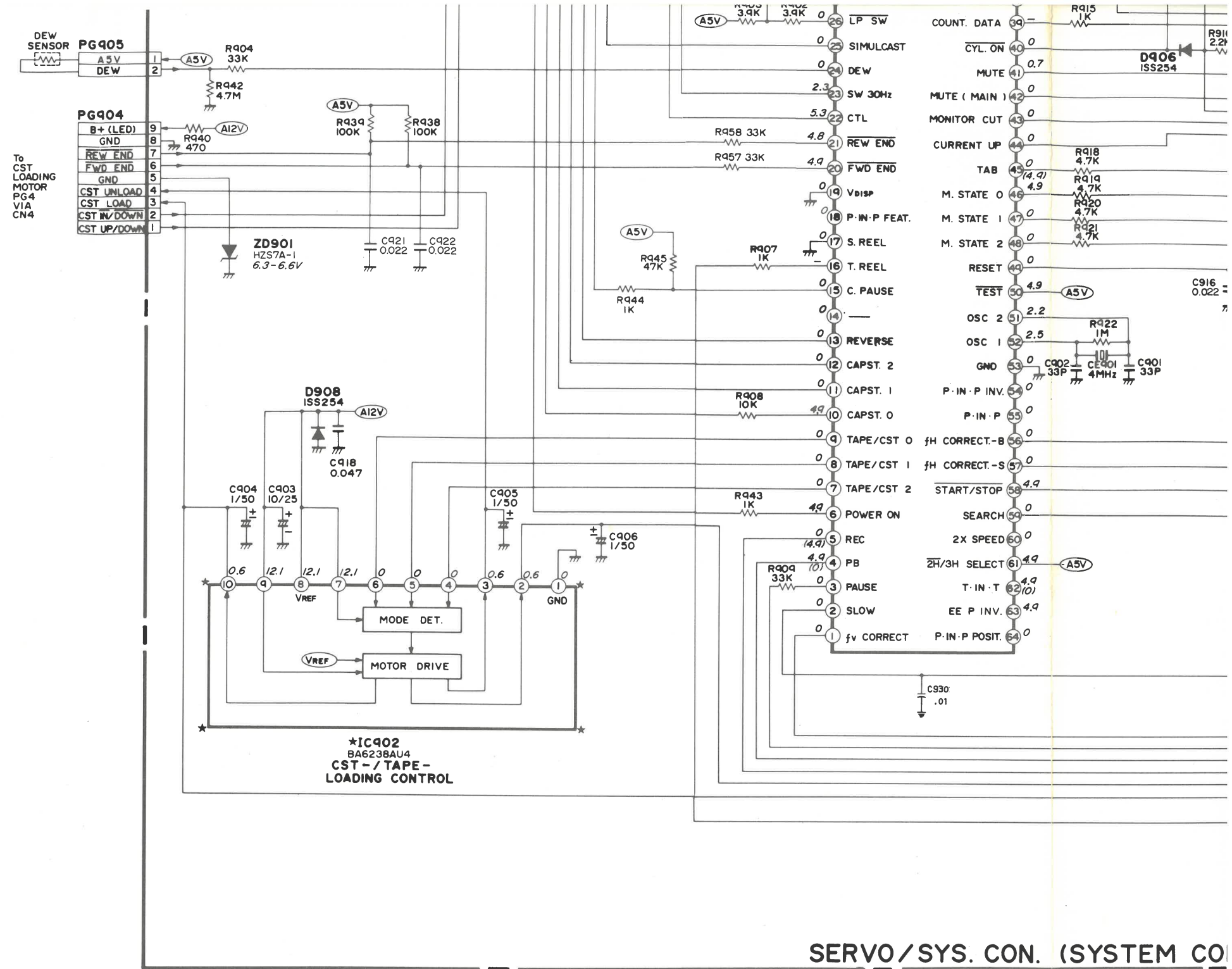
2-J3

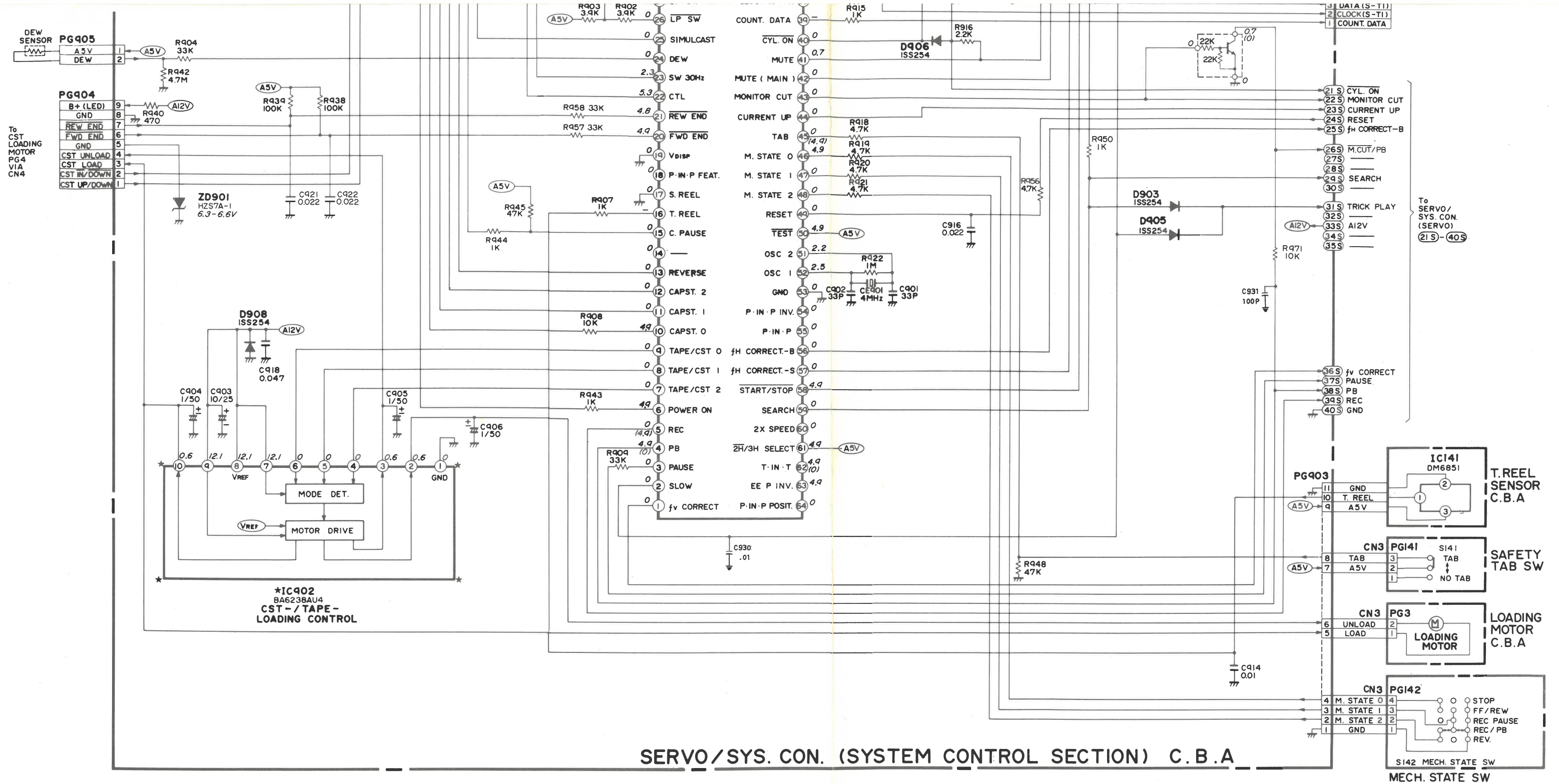
2-J4

## SYSTEM CONTROL SCHEMATIC



**BLANK**







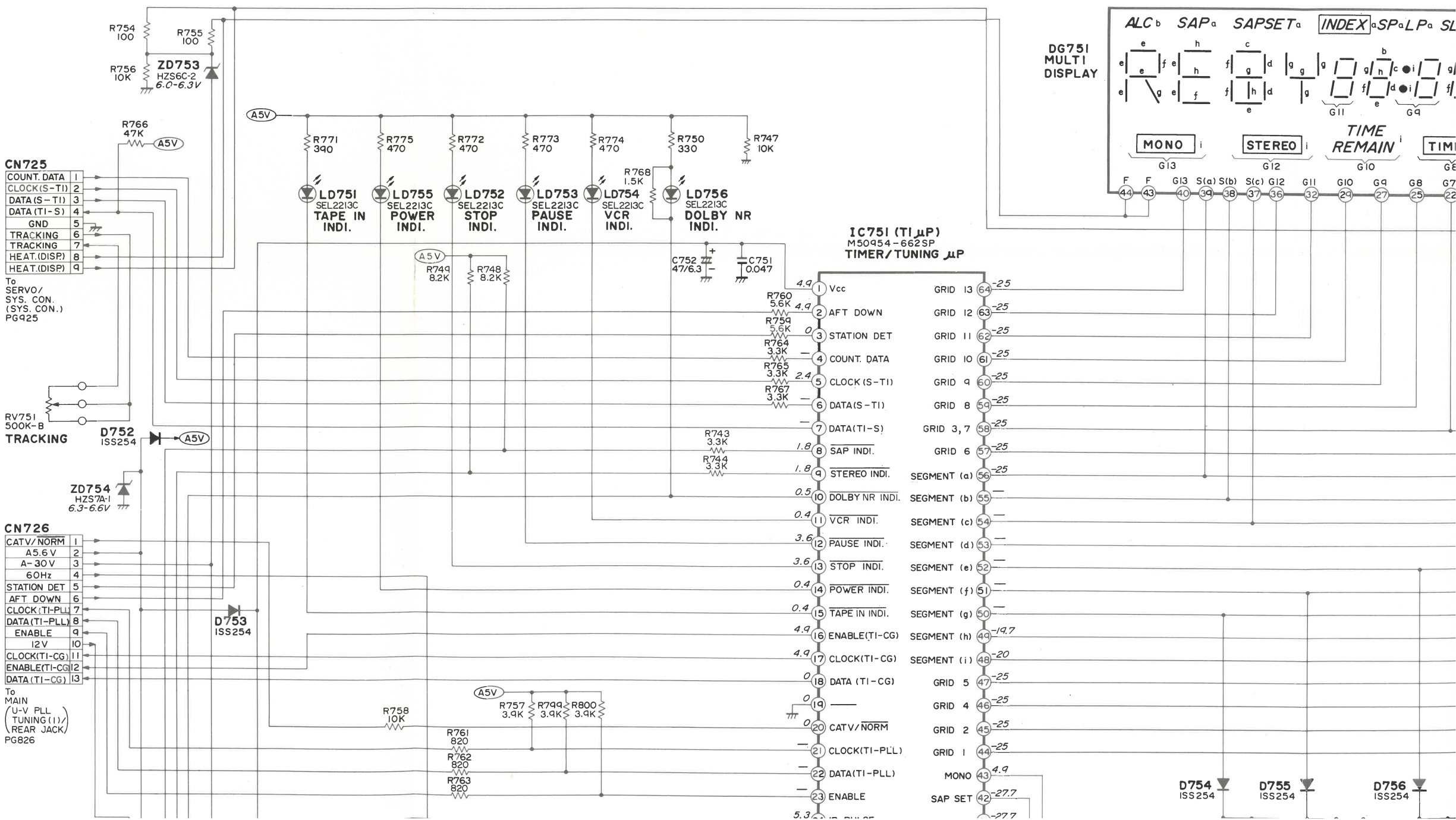
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VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE

TIMER/INPUT KEY/FUNCTION SWITCH SCHEMATIC (VPT396, 7, 8)

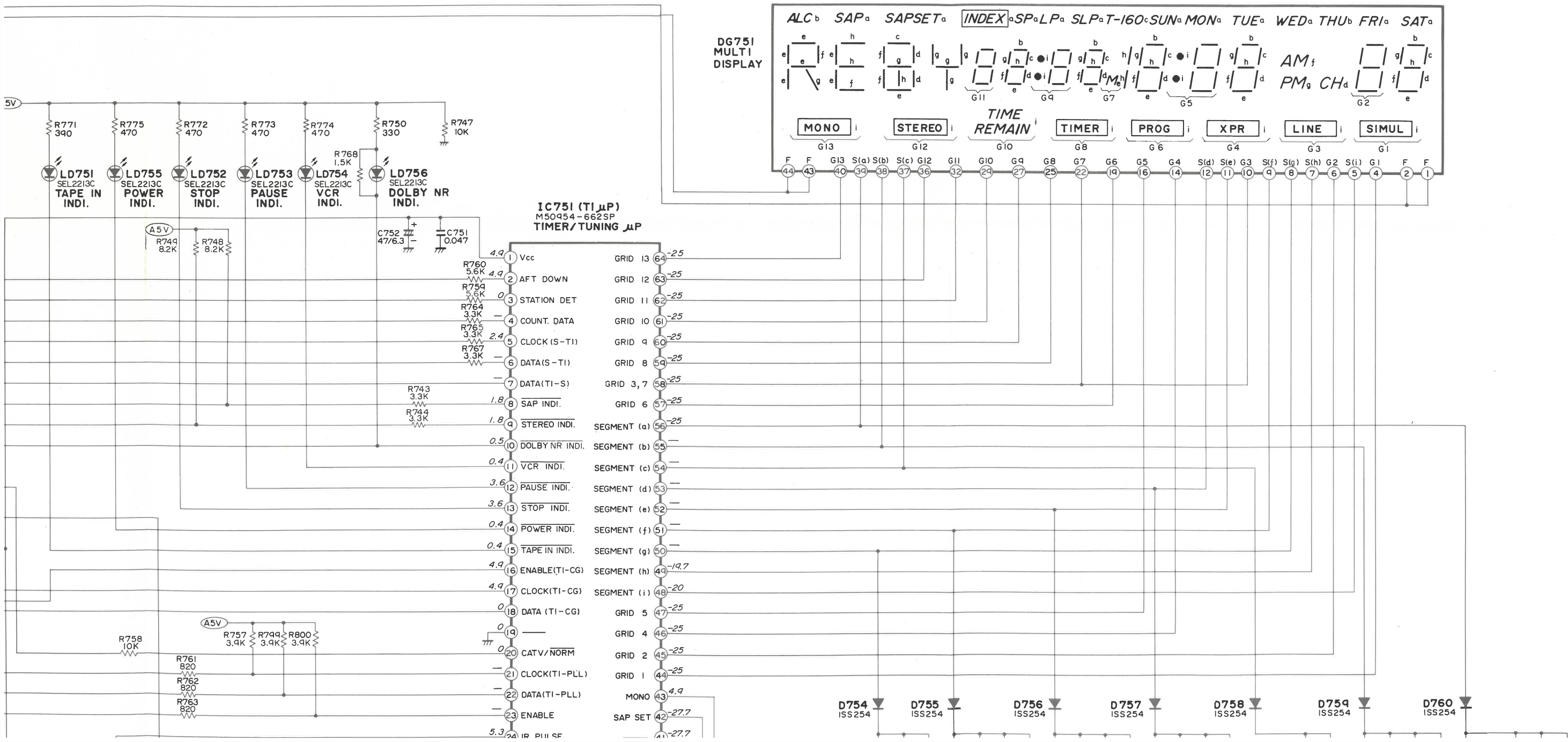


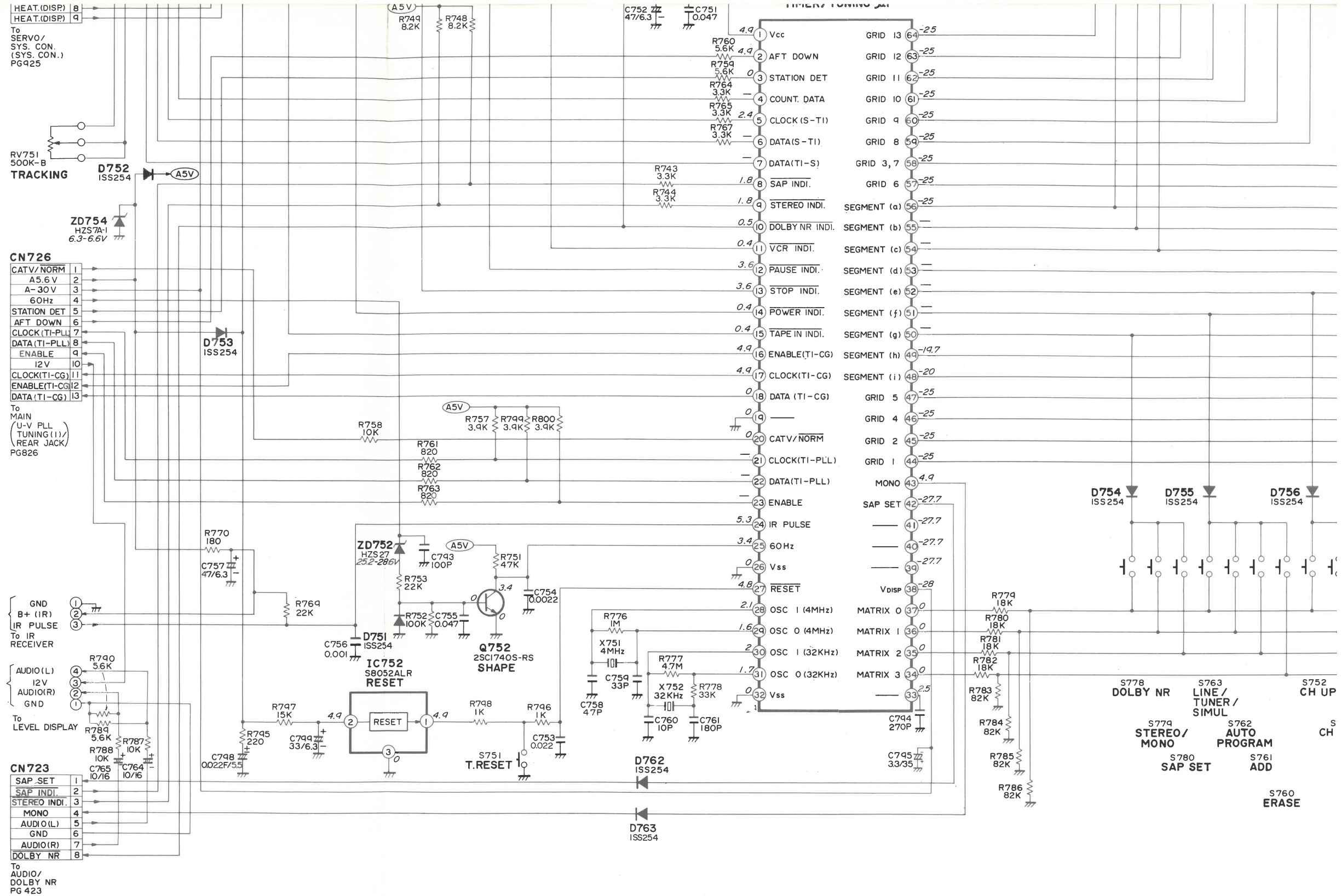
2-Y2

2-Y3

2-Y4

TIMER/INPUT KEY/FUNCTION SWITCH SCHEMATIC (VPT396, 7, 8)





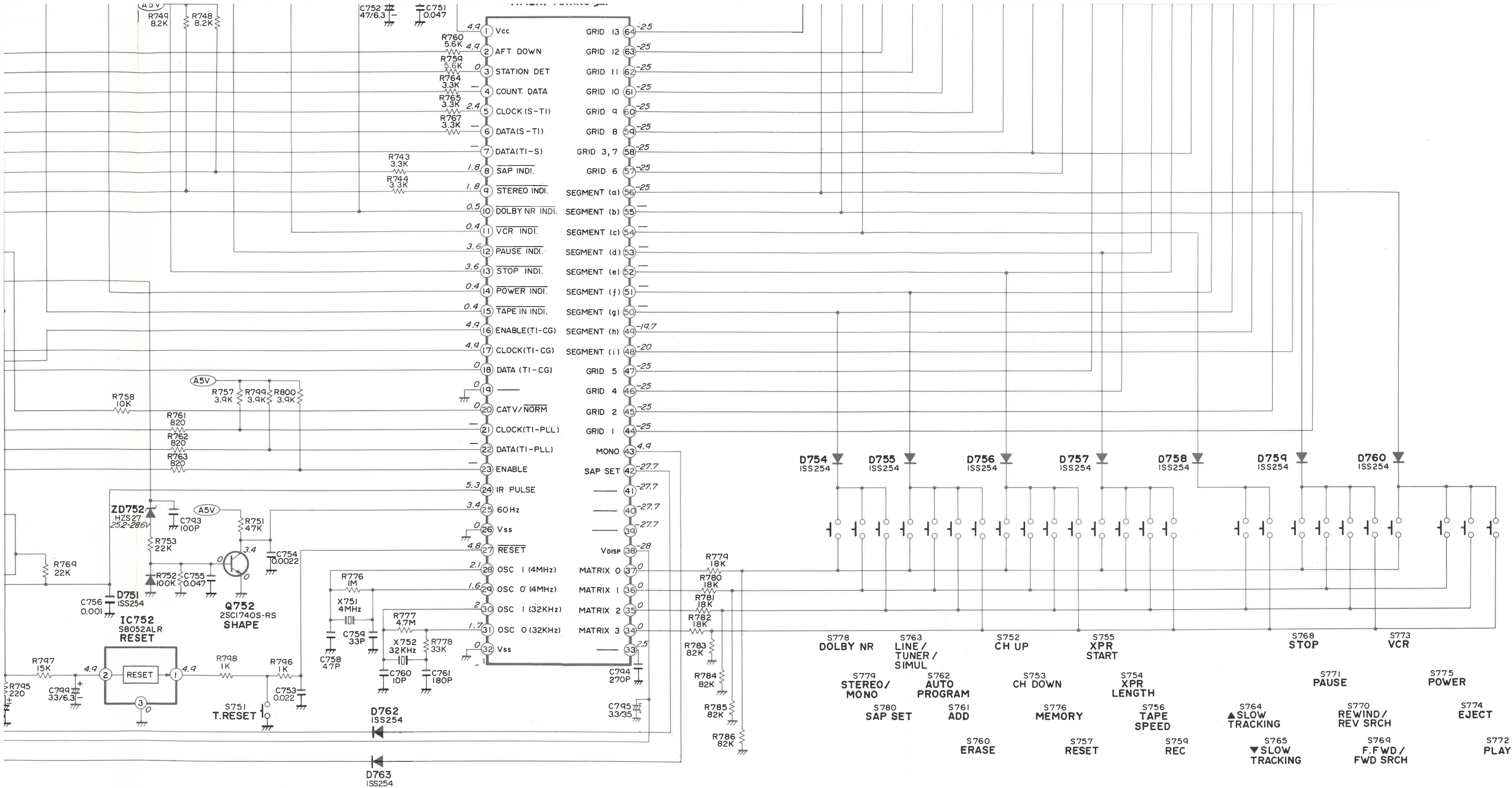
2-Y1

2-Y5

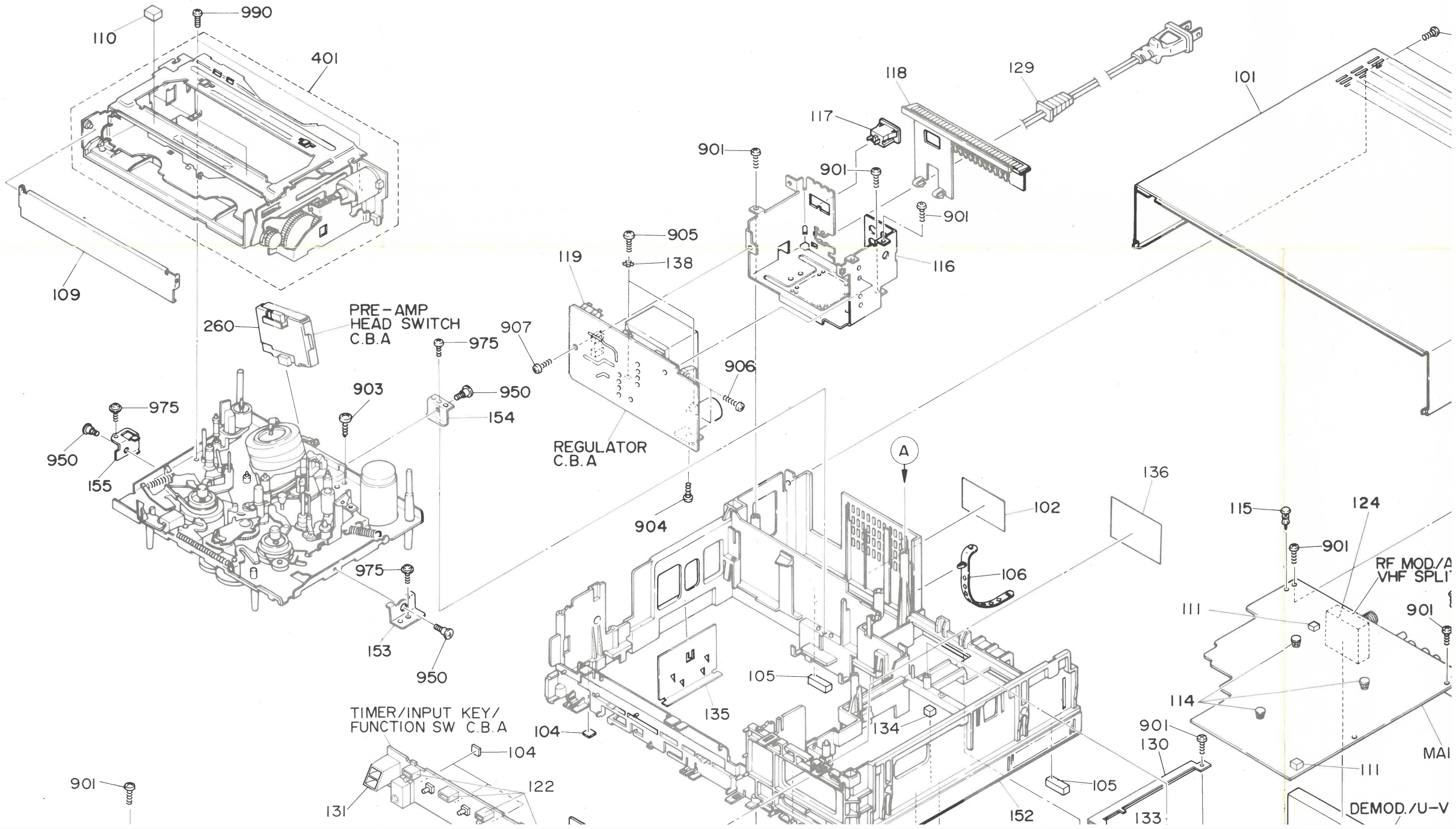
2-Y5

2-Y7





INSTRUMENT ASSEMBLY EXPLODED VIEW (VPT396, 7, 8)



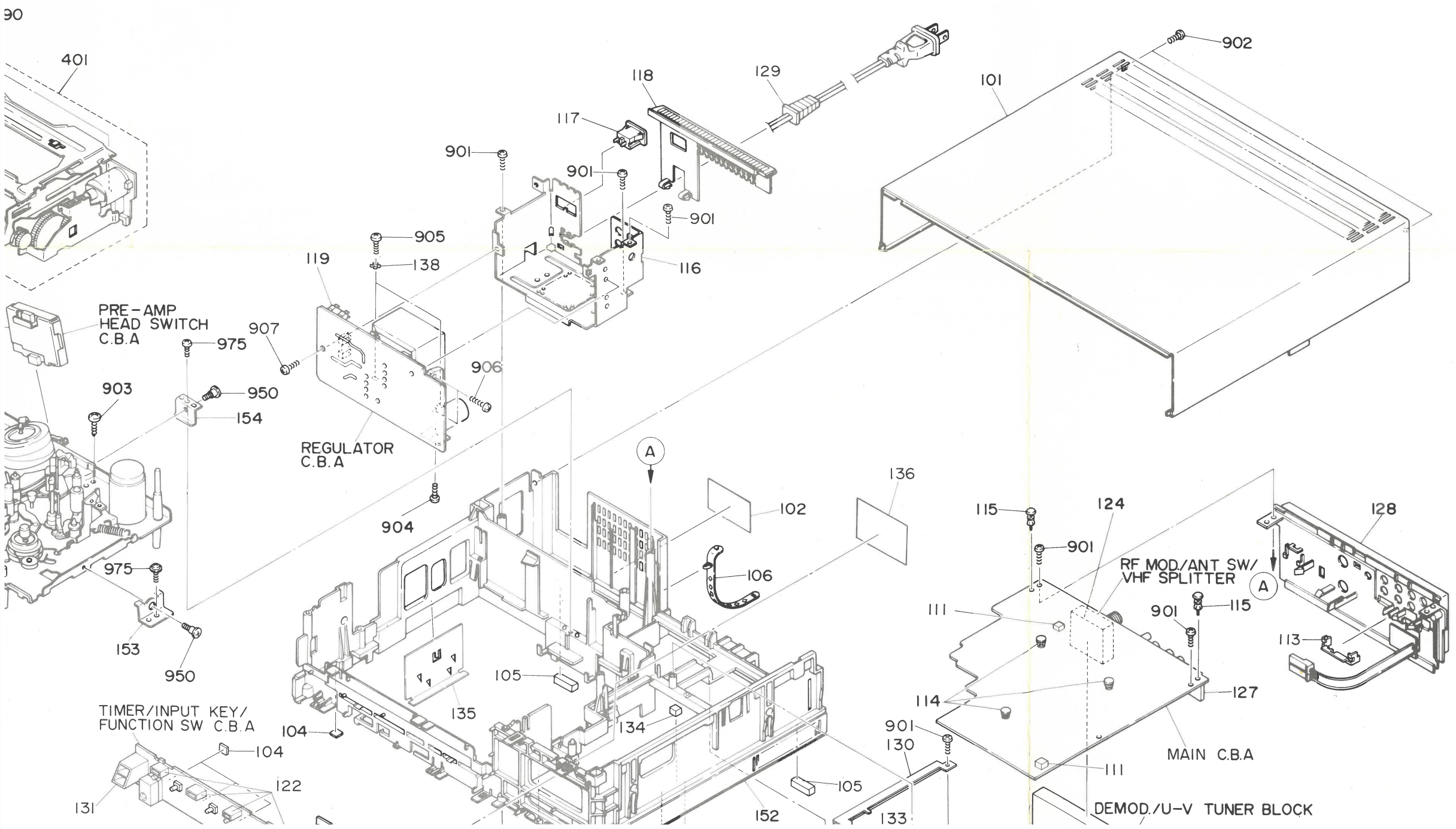


1-P2

1-P3

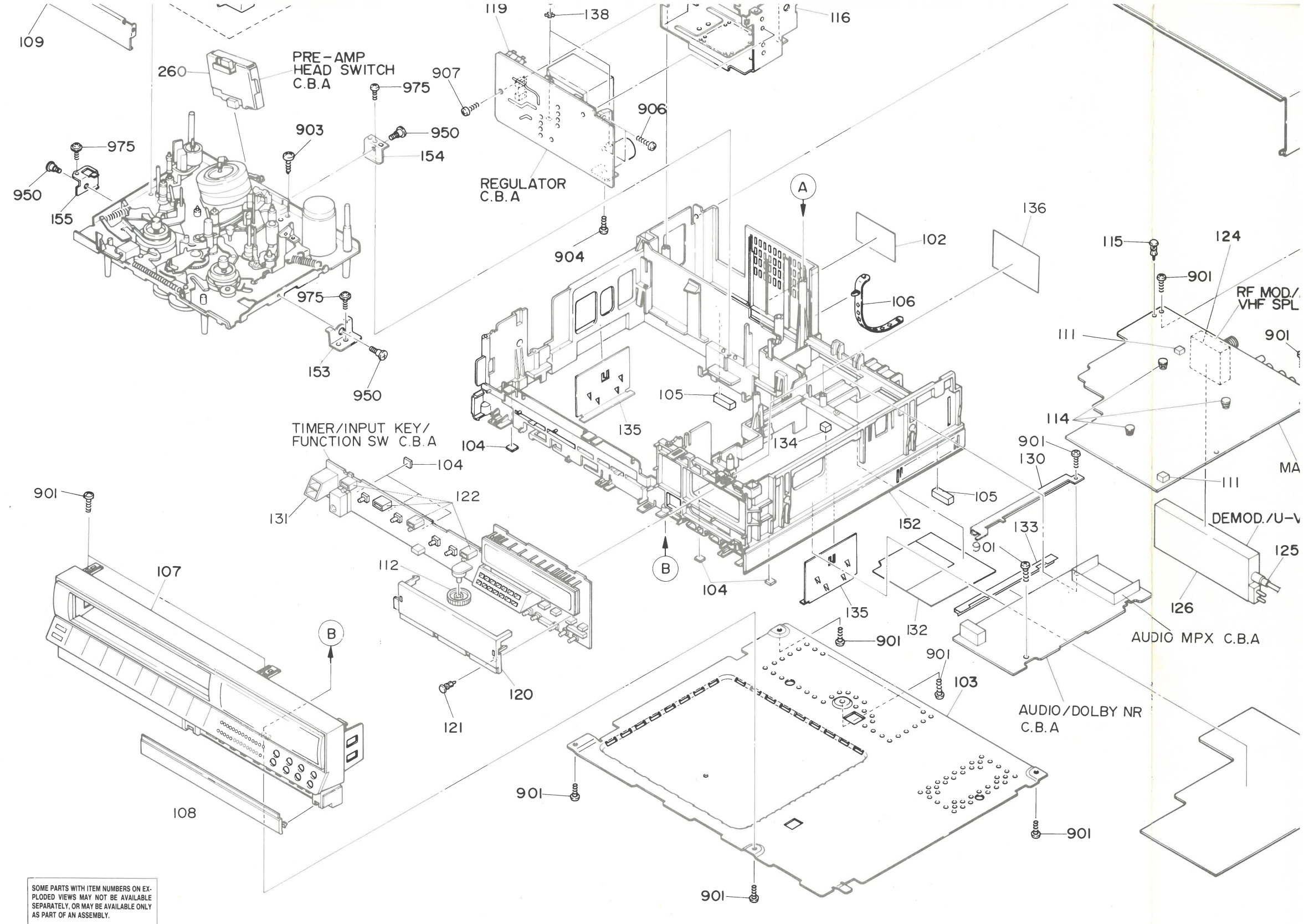
1-P4

INSTRUMENT ASSEMBLY EXPLODED VIEW (VPT396, 7, 8)



1-P4

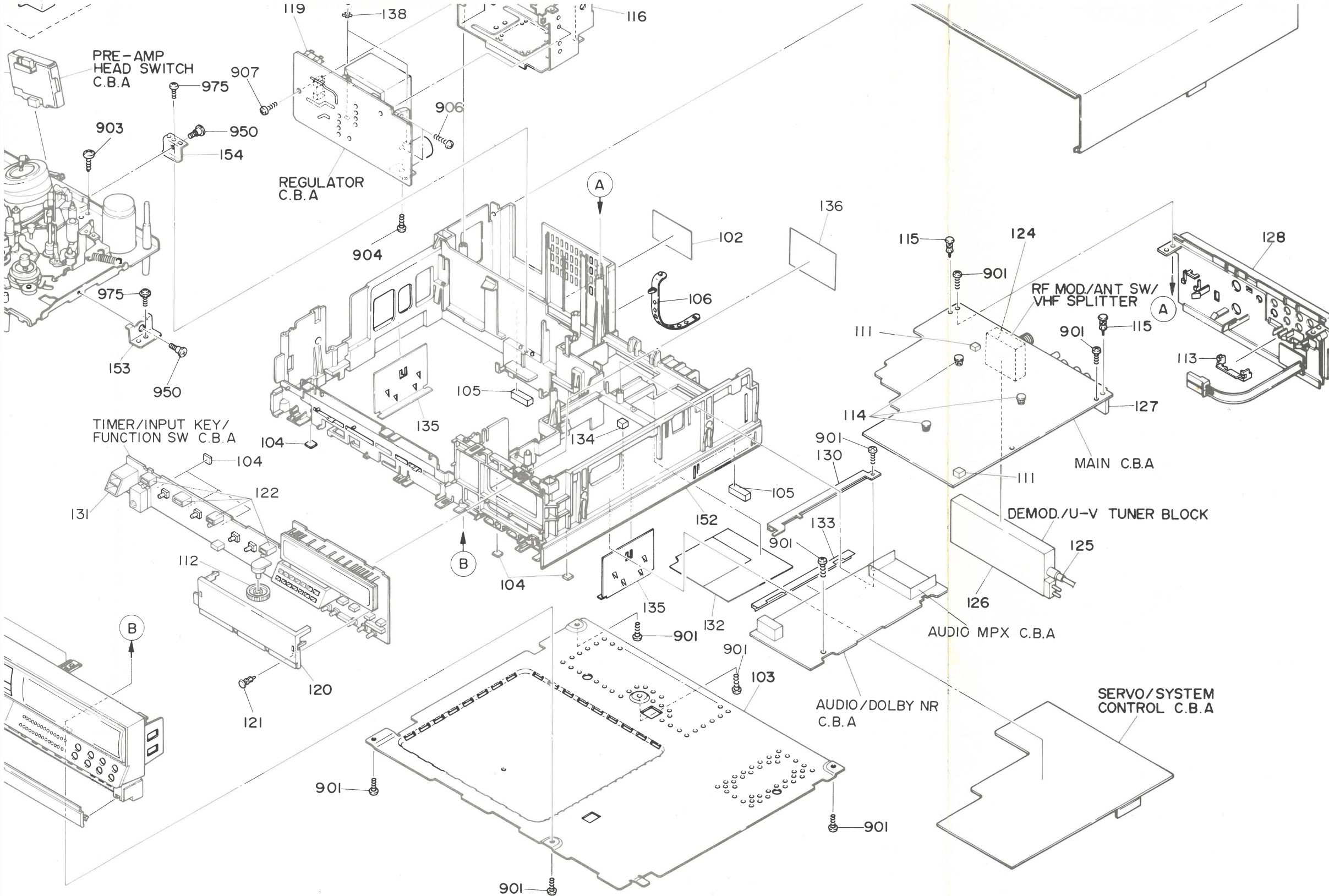
1-P8



SOME PARTS WITH ITEM NUMBERS ON EXPLODED VIEWS MAY NOT BE AVAILABLE SEPARATELY, OR MAY BE AVAILABLE ONLY AS PART OF AN ASSEMBLY.

(H) = GREASE (Stock no. 147347)  
 (S) = OIL (Stock no. 147468)





1-P4

1-P8

(H) = GREASE (Stock no. 147347)  
(S) = OIL (Stock no. 147468)

1-P6

1-P7



Video Cassette Recorder  
Basic Service Data **VHS**

RCA Corporation  
Consumer Electronics  
Technical Publications  
P O Box 1976 | Indianapolis, Indiana 46206

RCA Inc.  
Technical Publications  
5575 Royalmount Avenue | Town of Mount-Royal | Quebec, Canada H4P 1J8  
Canada Stock Numbers:  
Add prefix 66 to all stock numbers.

MASTER  
M  
1987 VPT395  
(Volume 2 of 2)

SERVICE DATA INDEX

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Schematic/Circuit Board Index

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Capstan Motor .....		2-3	Pre Amp Head Switch .....	2-8	
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Character Generator .....	2-11	2-14	Remote Control (TX) .....	2-9	2-9
Chrominance .....	2-9		RF Modulator/Antenna Switch/VHF		
Comb Filter .....	2-11	2-13	Splitter .....	2-8	2-16
Cylinder/Capstan Motor .....	2-3		Servo .....	2-4	2-15
Demodulator .....	2-8	2-16	System Control .....	2-1	
End Lamp .....		2-16	Take Up Reel Sensor .....		2-16
IR Receiver .....	2-2	2-2	Timer/Input Key/Function Switch .....	2-5	2-13
Interconnect .....	2-12		UHF/VHF Tuner/Splitter .....	2-6	2-15
Level Display .....	2-11		U-V PLL Tuning/Rear Jack .....	2-7	

SAFETY NOTICE

USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by stars (\*) on schematics and on the parts list in this Service Data and its bulletins. Before servicing this instrument, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in this Service Data.



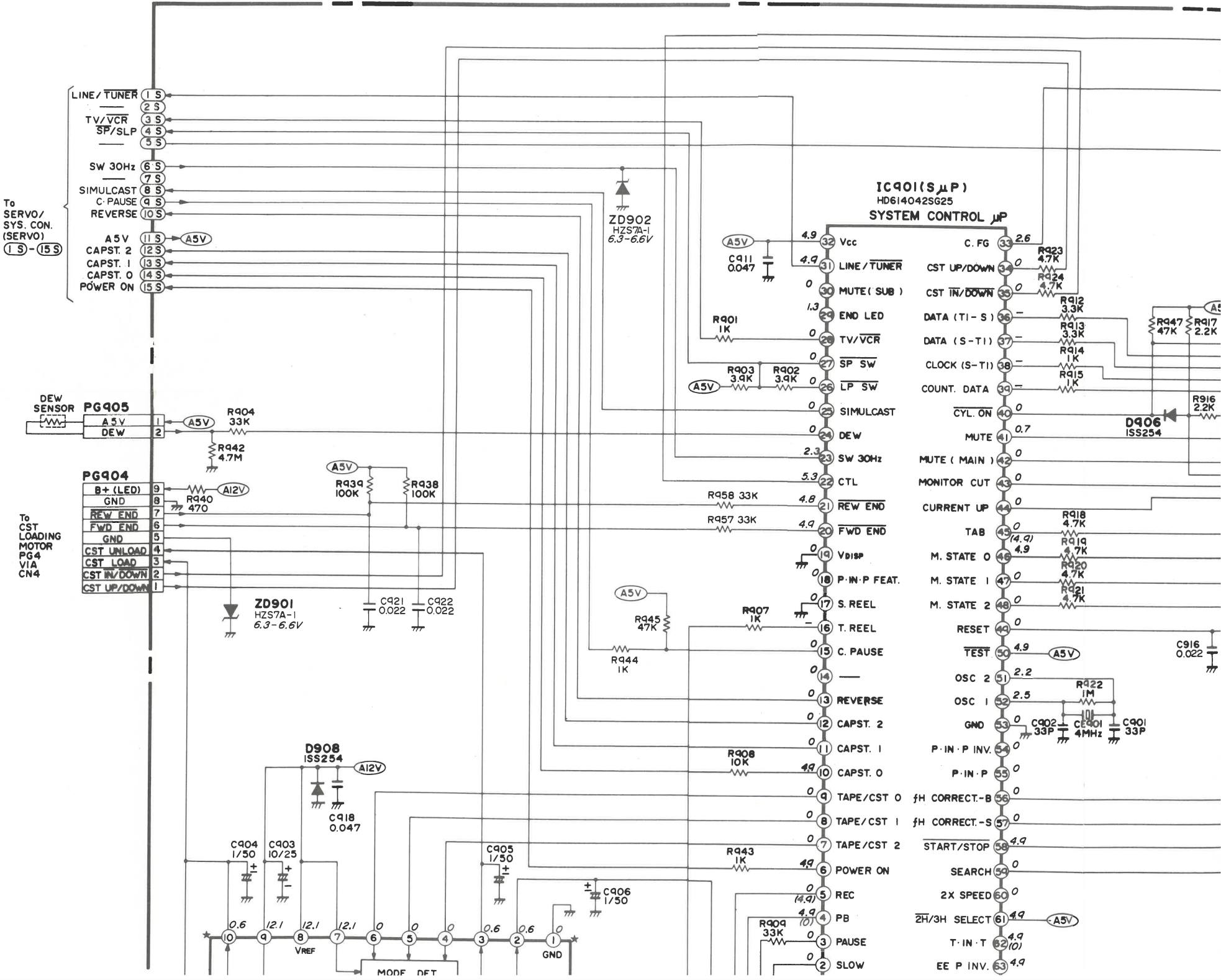
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SERVICING PRECAUTIONS SECTION OF THIS SERVICE DATA.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

PRODUCT SAFETY NOTE  
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VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE

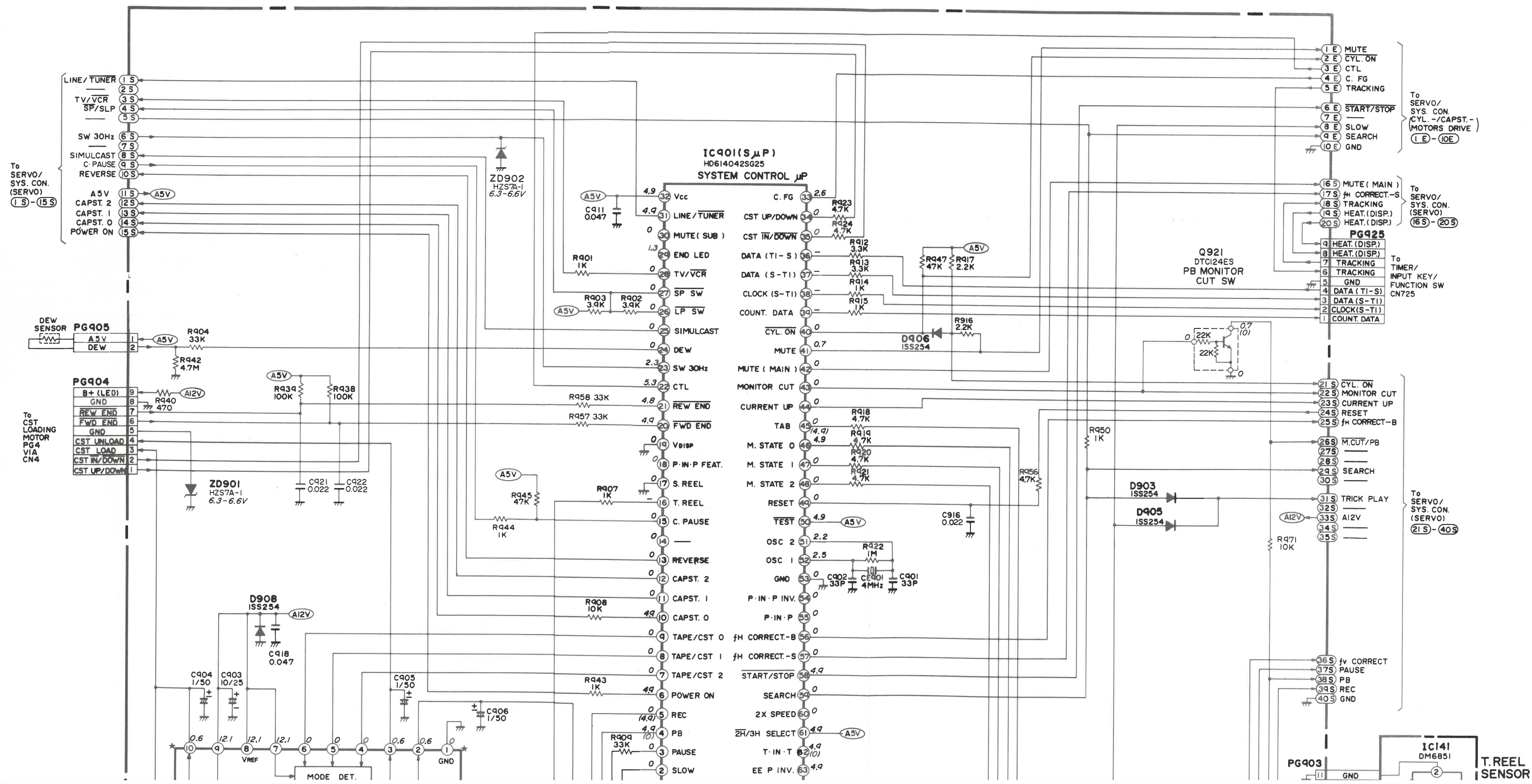
SYSTEM CONTROL SCHEMATIC





**2-J3**

### SYSTEM CONTROL SCHEMATIC



2-J1

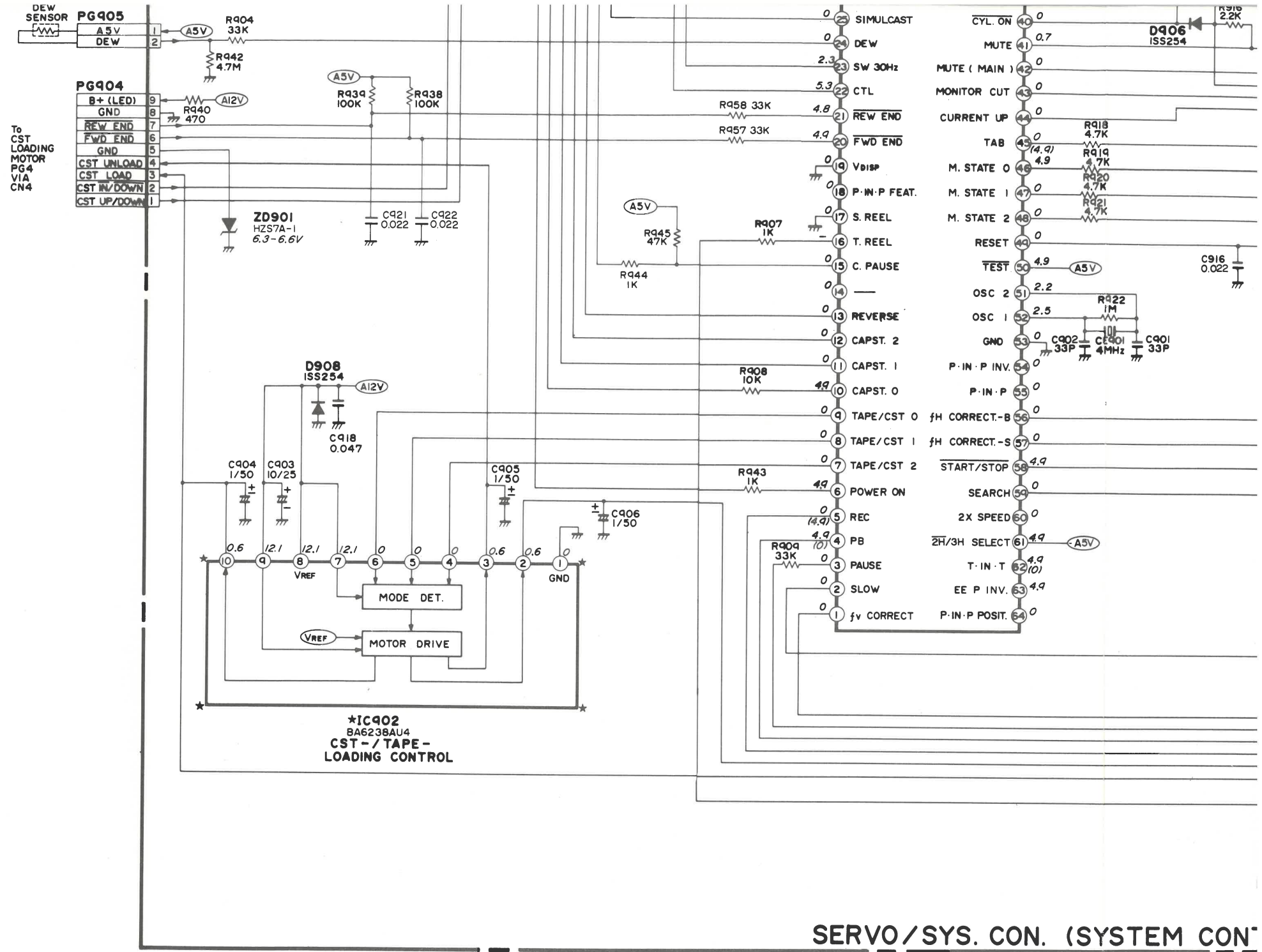
2-J5

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2-J5

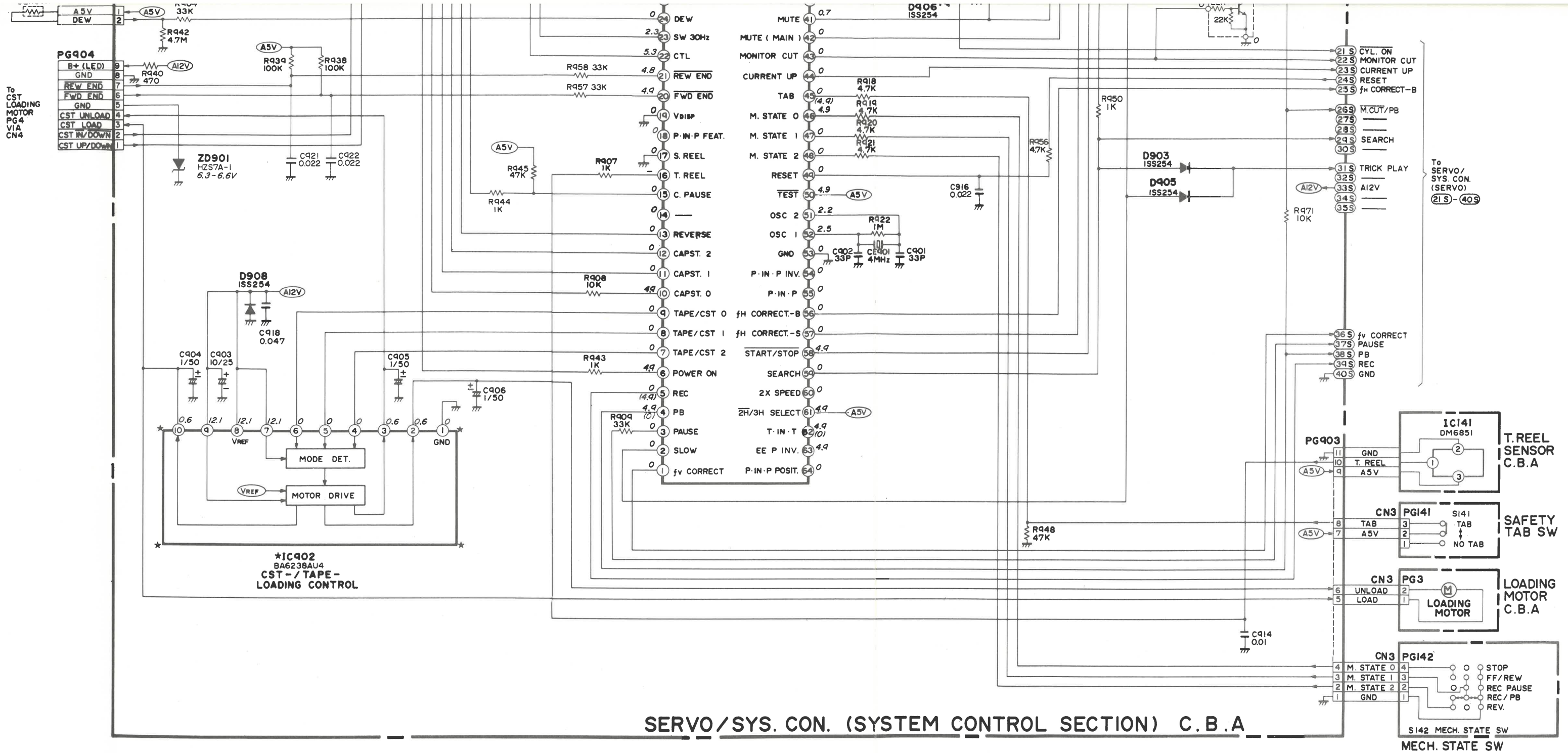
2-J6

2-J7



SERVO/SYS. CON. (SYSTEM CON)





LUMINANCE SCHEMATIC

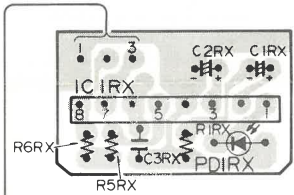
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VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE

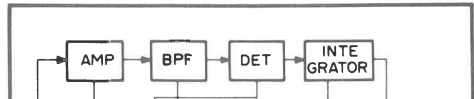
INFRARED RECEIVER CIRCUIT BOARD



① GND  
② B+ (IR)  
③ IR PULSE  
To  
TIMER/  
INPUT KEY/  
FUNCTION SW

INFRARED RECEIVER SCHEMATIC

IC1RX  
CX20106A  
PULSE SHAPE



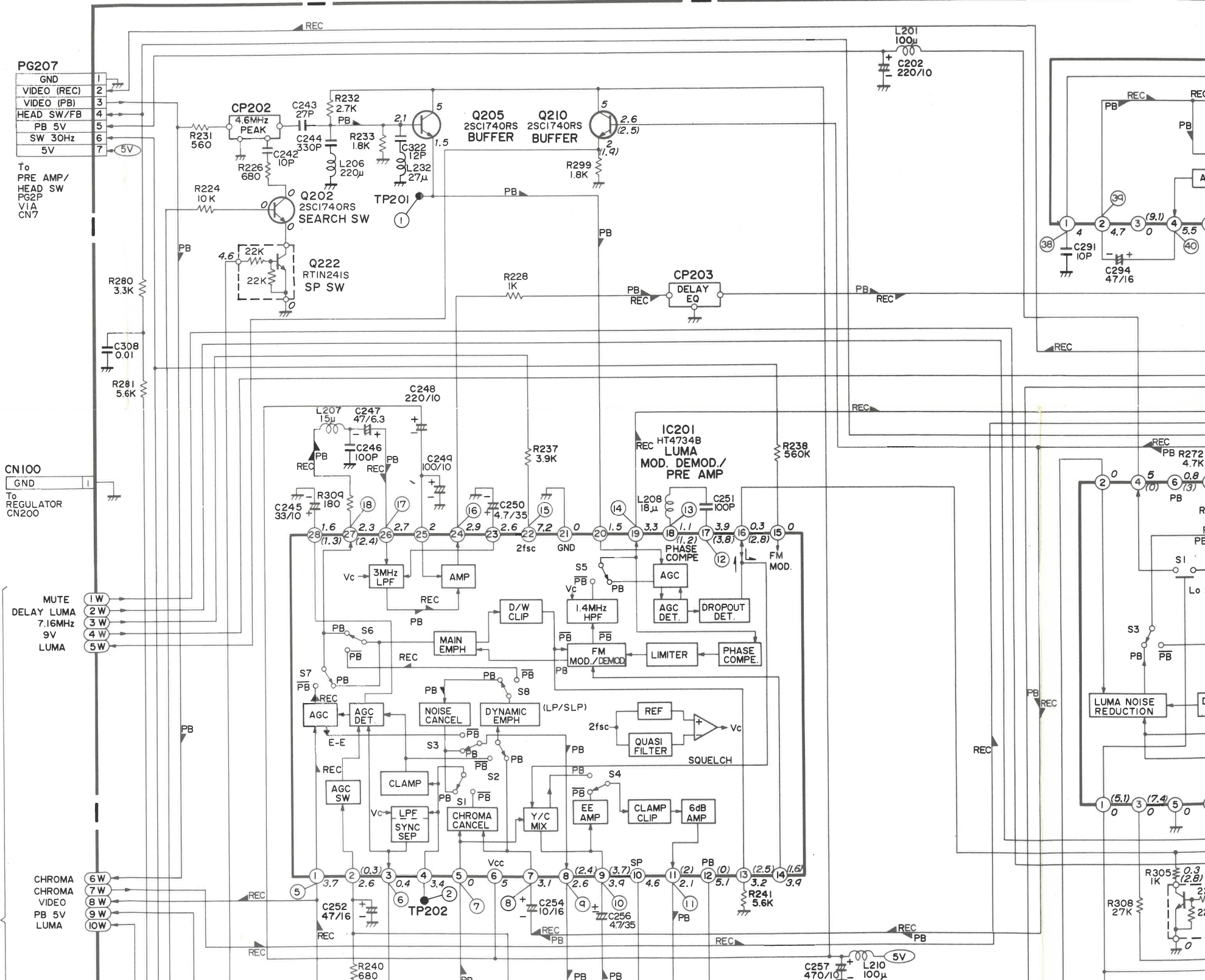
PG207	
GND	1
VIDEO (REC)	2
VIDEO (PB)	3
HEAD SW/FB	4
PB 5V	5
SW 30Hz	6
5V	7

To  
PRE AMP/  
HEAD SW  
PG2P  
VIA  
CN7

CN100  
GND  
To  
REGULATOR  
CN200

MUTE  
DELAY LUMA  
7.16MHz  
9V  
LUMA

CHROMA  
CHROMA  
VIDEO  
PB 5V  
LUMA

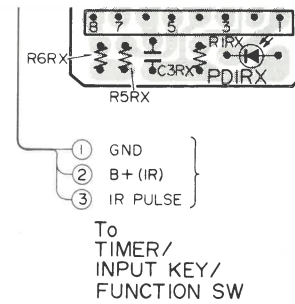




**2-K4**

The schematic diagram illustrates the internal circuitry of a video receiver, organized into several main functional sections:

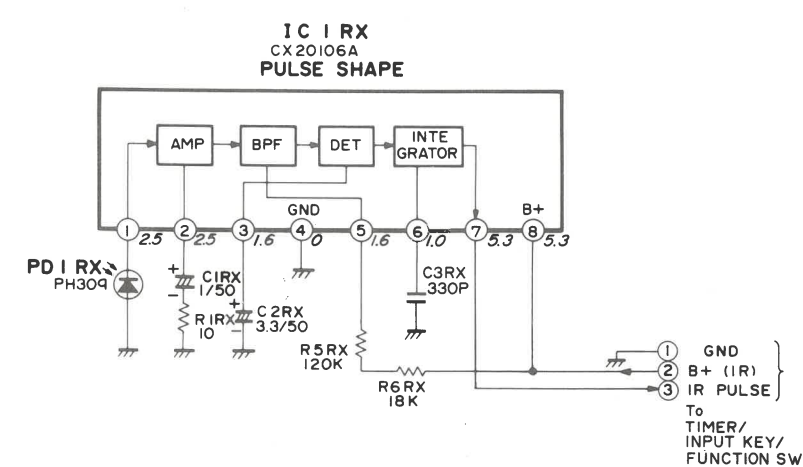
- Power and Tuning Section (Top Left):** Includes a 5V power supply, a 4.6MHz PEAK detector (CP202), and a 2SC1740RS SEARCH SW (Q202). It also features a 2SC1740RS BUFFER (Q205) and a 2SC1740RS BUFFER (Q210).
- Video Processing Section (Center):** The core of the receiver, featuring the IC201 HT4734B LUMA MOD. DEMOD./PRE AMP. This section includes various control and processing blocks such as AGC, D/W CLIP, 1.4MHz HPF, PHASE COMPE, LIMITER, and SQUELCH. It also includes a 3MHz LPF, 1.4MHz HPF, and a 2fsc signal path.
- Detail Enhancer Section (Top Right):** Includes the IC203 HA11888 DETAIL ENHANCER, which is used to enhance the detail of the video signal. It includes a BUFFER, AMP, and various control points.
- Video Amplifier and Noise Reduction Section (Bottom Right):** Features the IC205 HT4753A REC AMP/LUMA NOISE REDUCTION. This section includes a CLAMP, EDGE ENHA, and various control points for noise reduction and signal amplification.
- Other Components:** The diagram includes numerous passive components like resistors (R231, R232, R233, R237, R238, R240, R241, R242, R243, R244, R245, R246, R247, R248, R249, R250, R251, R252, R253, R254, R255, R256, R257, R258, R259, R260, R261, R262, R263, R264, R265, R266, R267, R268, R269, R270, R271, R272, R273, R274, R275, R276, R277, R278, R279, R280, R281, R282, R283, R284, R285, R286, R287, R288, R289, R290, R291, R292, R293, R294, R295, R296, R297, R298, R299, R300, R301, R302, R303, R304, R305, R306, R307, R308, R309, R310, R311, R312, R313, R314, R315, R316, R317, R318, R319, R320, R321, R322, R323, R324, R325, R326, R327, R328, R329, R330, R331, R332, R333, R334, R335, R336, R337, R338, R339, R340, R341, R342, R343, R344, R345, R346, R347, R348, R349, R350, R351, R352, R353, R354, R355, R356, R357, R358, R359, R360, R361, R362, R363, R364, R365, R366, R367, R368, R369, R370, R371, R372, R373, R374, R375, R376, R377, R378, R379, R380, R381, R382, R383, R384, R385, R386, R387, R388, R389, R390, R391, R392, R393, R394, R395, R396, R397, R398, R399, R400, R401, R402, R403, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, R442, R443, R444, R445, R446, R447, R448, R449, R450, R451, R452, R453, R454, R455, R456, R457, R458, R459, R460, R461, R462, R463, R464, R465, R466, R467, R468, R469, R470, R471, R472, R473, R474, R475, R476, R477, R478, R479, R480, R481, R482, R483, R484, R485, R486, R487, R488, R489, R490, R491, R492, R493, R494, R495, R496, R497, R498, R499, R500, R501, R502, R503, R504, R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520, R521, R522, R523, R524, R525, R526, R527, R528, R529, R530, R531, R532, R533, R534, R535, R536, R537, R538, R539, R540, R541, R542, R543, R544, R545, R546, R547, R548, R549, R550, R551, R552, R553, R554, R555, R556, R557, R558, R559, R560, R561, R562, R563, R564, R565, R566, R567, R568, R569, R570, R571, R572, R573, R574, R575, R576, R577, R578, R579, R580, R581, R582, R583, R584, R585, R586, R587, R588, R589, R590, R591, R592, R593, R594, R595, R596, R597, R598, R599, R600, R601, R602, R603, R604, R605, R606, R607, R608, R609, R610, R611, R612, R613, R614, R615, R616, R617, R618, R619, R620, R621, R622, R623, R624, R625, R626, R627, R628, R629, R630, R631, R632, R633, R634, R635, R636, R637, R638, R639, R640, R641, R642, R643, R644, R645, R646, R647, R648, R649, R650, R651, R652, R653, R654, R655, R656, R657, R658, R659, R660, R661, R662, R663, R664, R665, R666, R667, R668, R669, R670, R671, R672, R673, R674, R675, R676, R677, R678, R679, R680, R681, R682, R683, R684, R685, R686, R687, R688, R689, R690, R691, R692, R693, R694, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704, R705, R706, R707, R708, R709, R710, R711, R712, R713, R714, R715, R716, R717, R718, R719, R720, R721, R722, R723, R724, R725, R726, R727, R728, R729, R730, R731, R732, R733, R734, R735, R736, R737, R738, R739, R740, R741, R742, R743, R744, R745, R746, R747, R748, R749, R750, R751, R752, R753, R754, R755, R756, R757, R758, R759, R760, R761, R762, R763, R764, R765, R766, R767, R768, R769, R770, R771, R772, R773, R774, R775, R776, R777, R778, R779, R780, R781, R782, R783, R784, R785, R786, R787, R788, R789, R790, R791, R792, R793, R794, R795, R796, R797, R798, R799, R800, R801, R802, R803, R804, R805, R806, R807, R808, R809, R810, R811, R812, R813, R814, R815, R816, R817, R818, R819, R820, R821, R822, R823, R824, R825, R826, R827, R828, R829, R830, R831, R832, R833, R834, R835, R836, R837, R838, R839, R840, R841, R842, R843, R844, R845, R846, R847, R848, R849, R850, R851, R852, R853, R854, R855, R856, R857, R858, R859, R860, R861, R862, R863, R864, R865, R866, R867, R868, R869, R870, R871, R872, R873, R874, R875, R876, R877, R878, R879, R880, R881, R882, R883, R884, R885, R886, R887, R888, R889, R890, R891, R892, R893, R894, R895, R896, R897, R898, R899, R900, R901, R902, R903, R904, R905, R906, R907, R908, R909, R910, R911, R912, R913, R914, R915, R916, R917, R918, R919, R920, R921, R922, R923, R924, R925, R926, R927, R928, R929, R930, R931, R932, R933, R934, R935, R936, R937, R938, R939, R940, R941, R942, R943, R944, R945, R946, R947, R948, R949, R950, R951, R952, R953, R954, R955, R956, R957, R958, R959, R960, R961, R962, R963, R964, R965, R966, R967, R968, R969



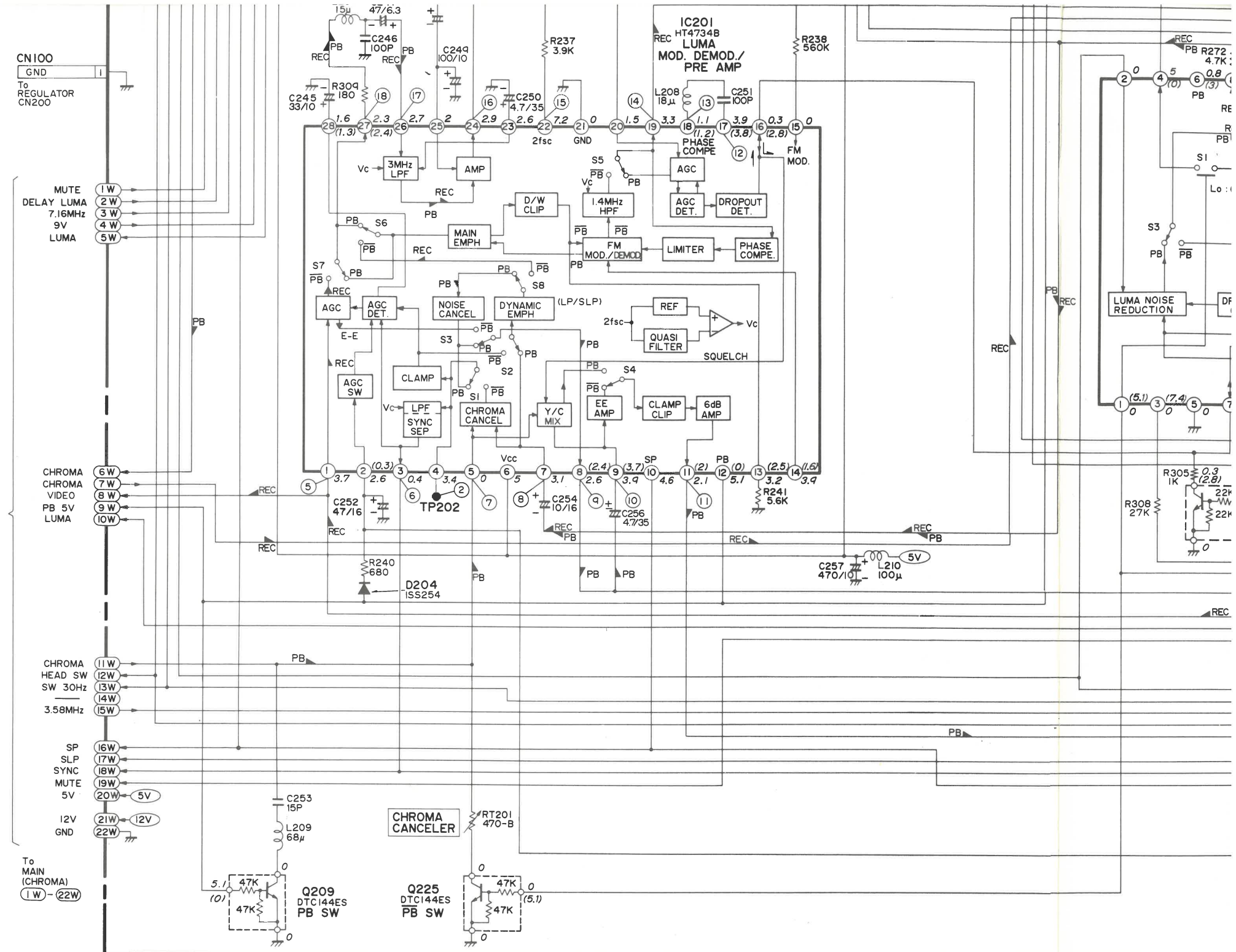
2-K1

2-K5

INFRARED RECEIVER SCHEMATIC



2-K5




2-K6

2-K7





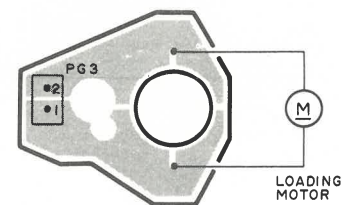
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VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE

## LOADING MOTOR CIRCUIT BOARD

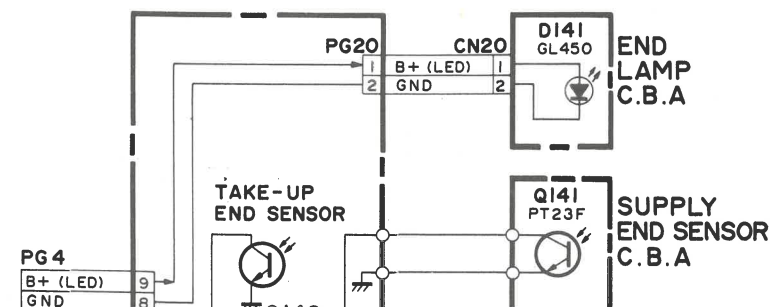


PG 3

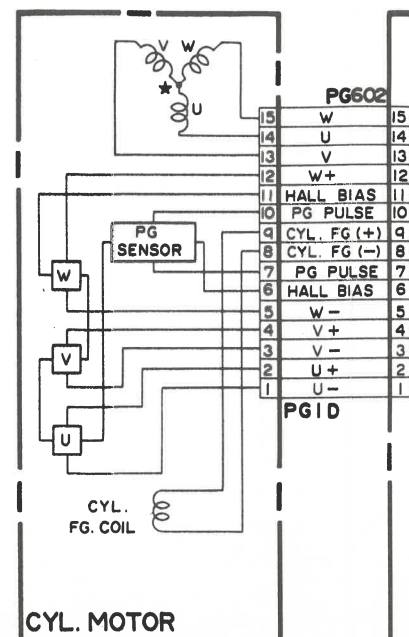
2	UNLOAD
1	LOAD

To  
SERVO/SYS.CON.  
(SYSTEM  
CONTROL)  
PG903  
VIA  
CN 3

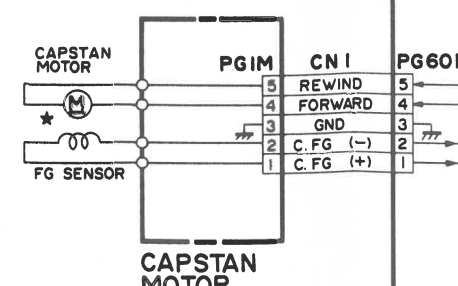
### CASSETTE LOADING MOTOR SCHEMATIC



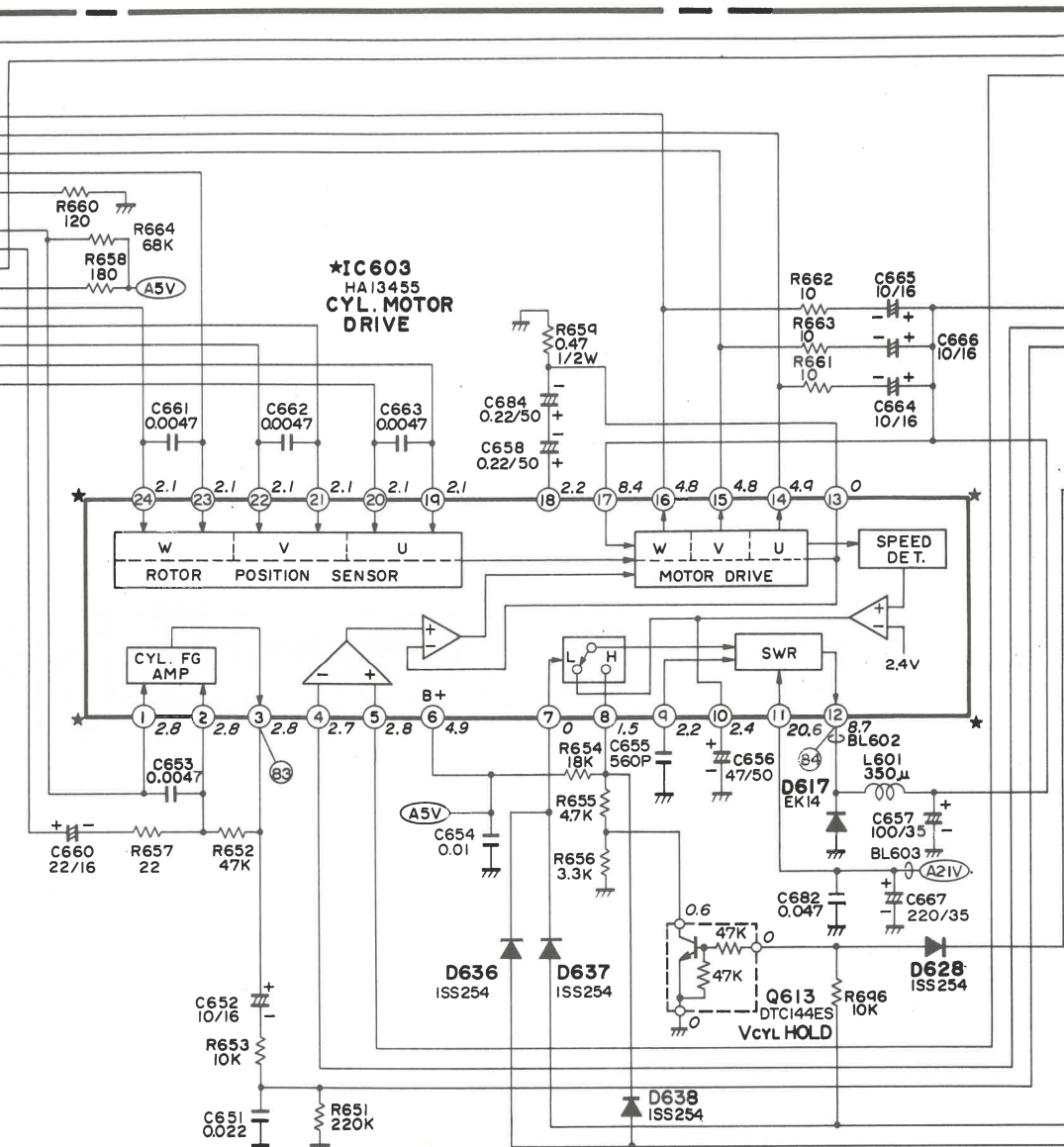
CYL. MOTOR



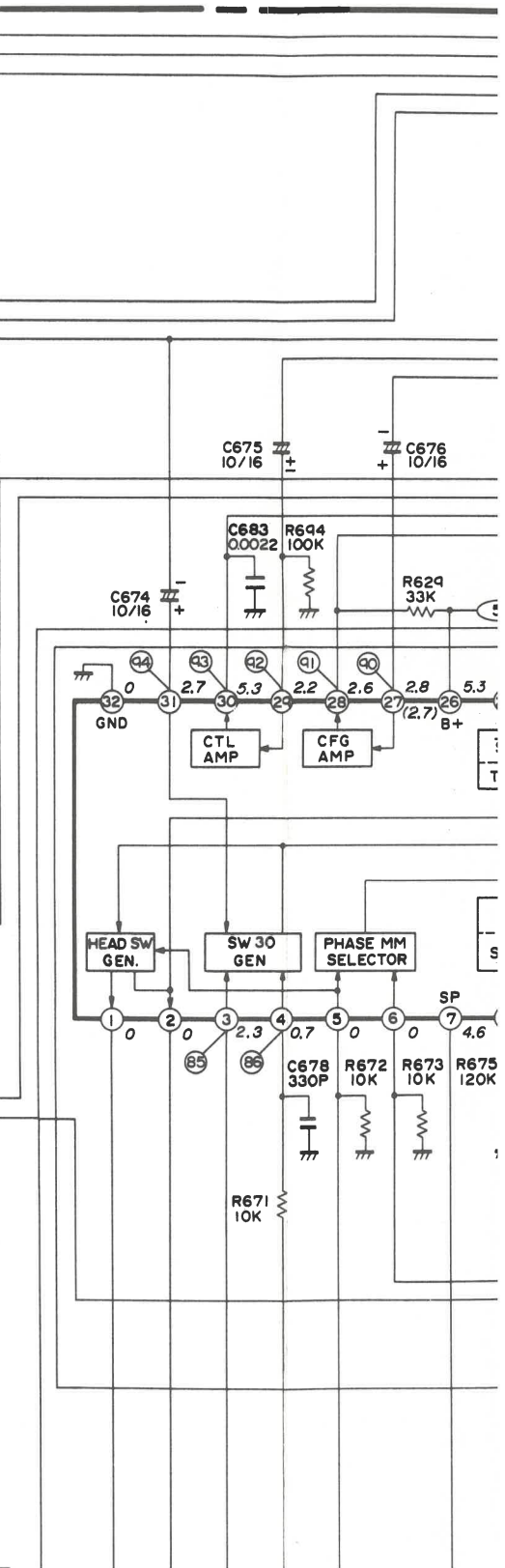
★IC602  
M54645AL  
CAPSTAN  
MOTOR DRIVE



★IC603  
HA13455  
CYL. MOTOR  
DRIVE

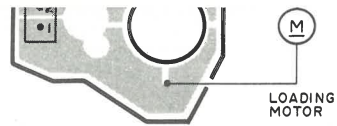


### CYLINDER/CAPSTAN MOTOR DRIVE SCHEMATIC









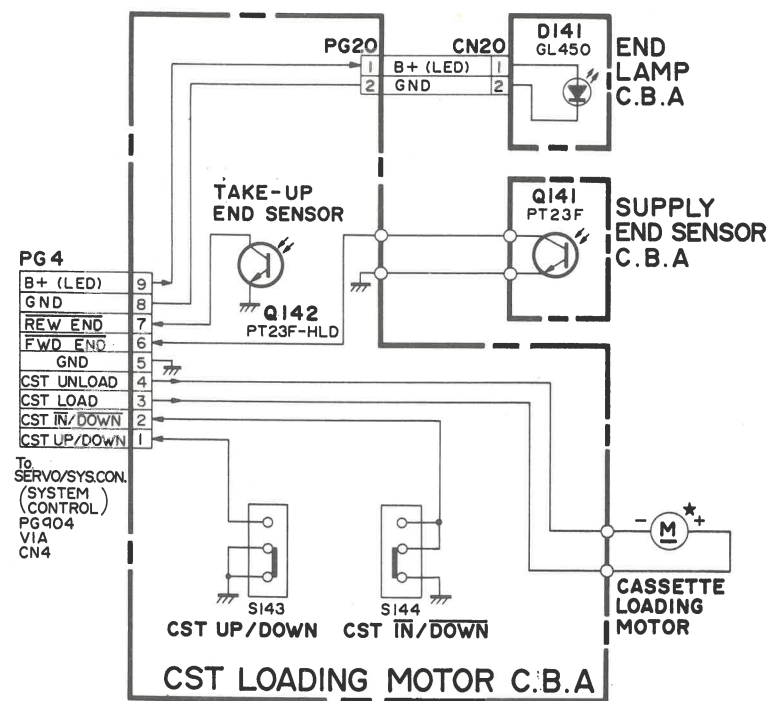
PG 3	
2	UNLOAD
1	LOAD

To  
SERVO/SYS.CON.  
(SYSTEM  
CONTROL)  
PG903  
VIA  
CN3

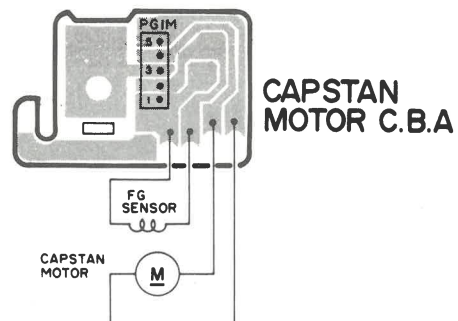
2-L1

2-L5

### CASSETTE LOADING MOTOR SCHEMATIC

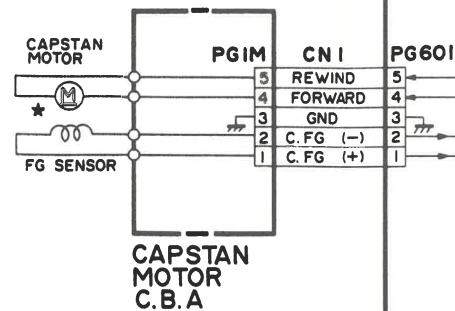


### CAPSTAN MOTOR CIRCUIT BOARD

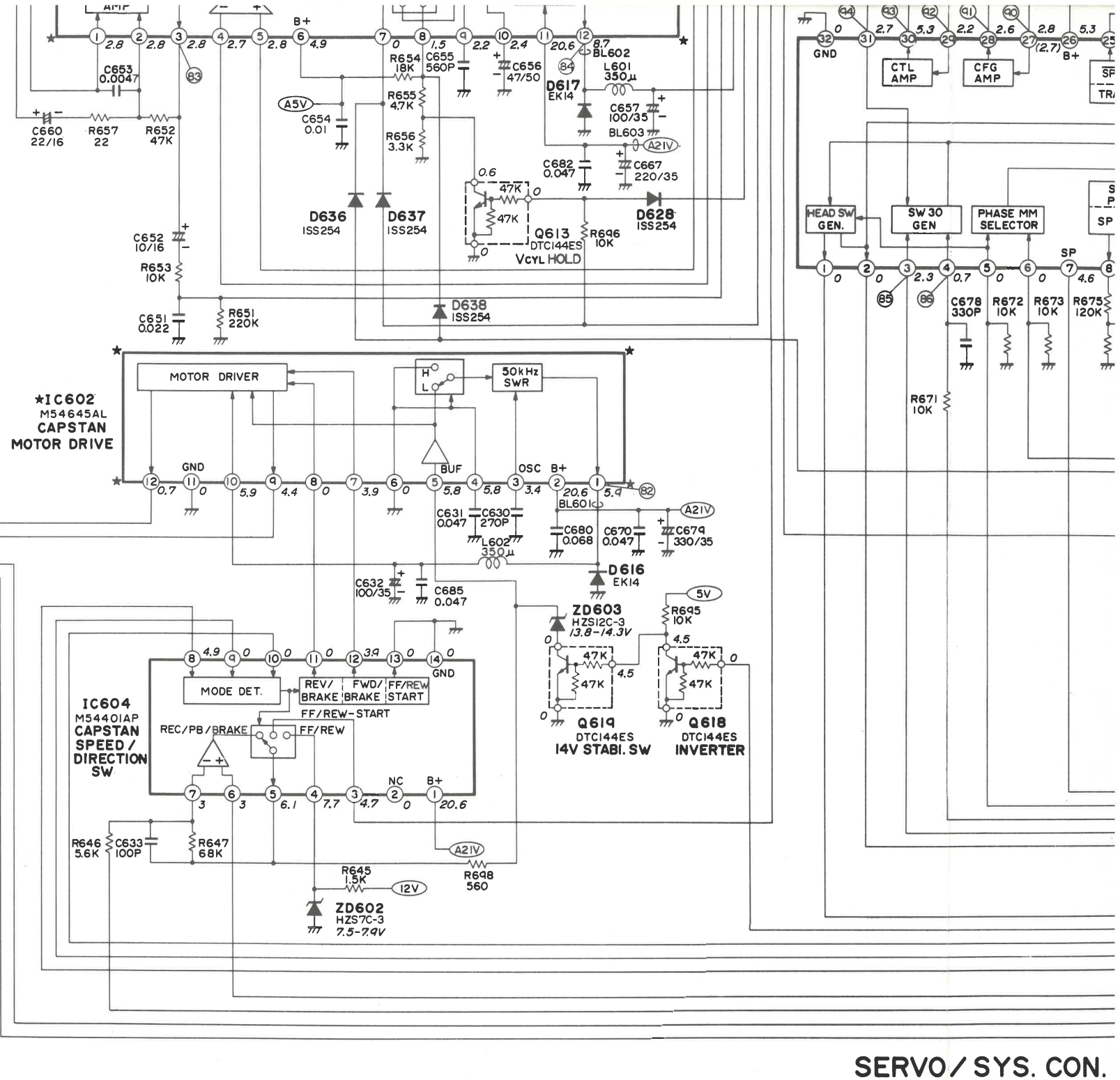


PG 1M		To SERVO/SYS.CON. (CYL.-/CAPST.-) (MOTORS DRIVE) PG601 VIA CN1
5	REWIND	
4	FORWARD	
3	GND	
2	C. FG (-)	
1	C. FG (+)	

2-L5



### \*IC602 M54645AL CAPSTAN MOTOR DRIVE

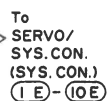


2-L6

SERVO/SYS.CON.

2-L7





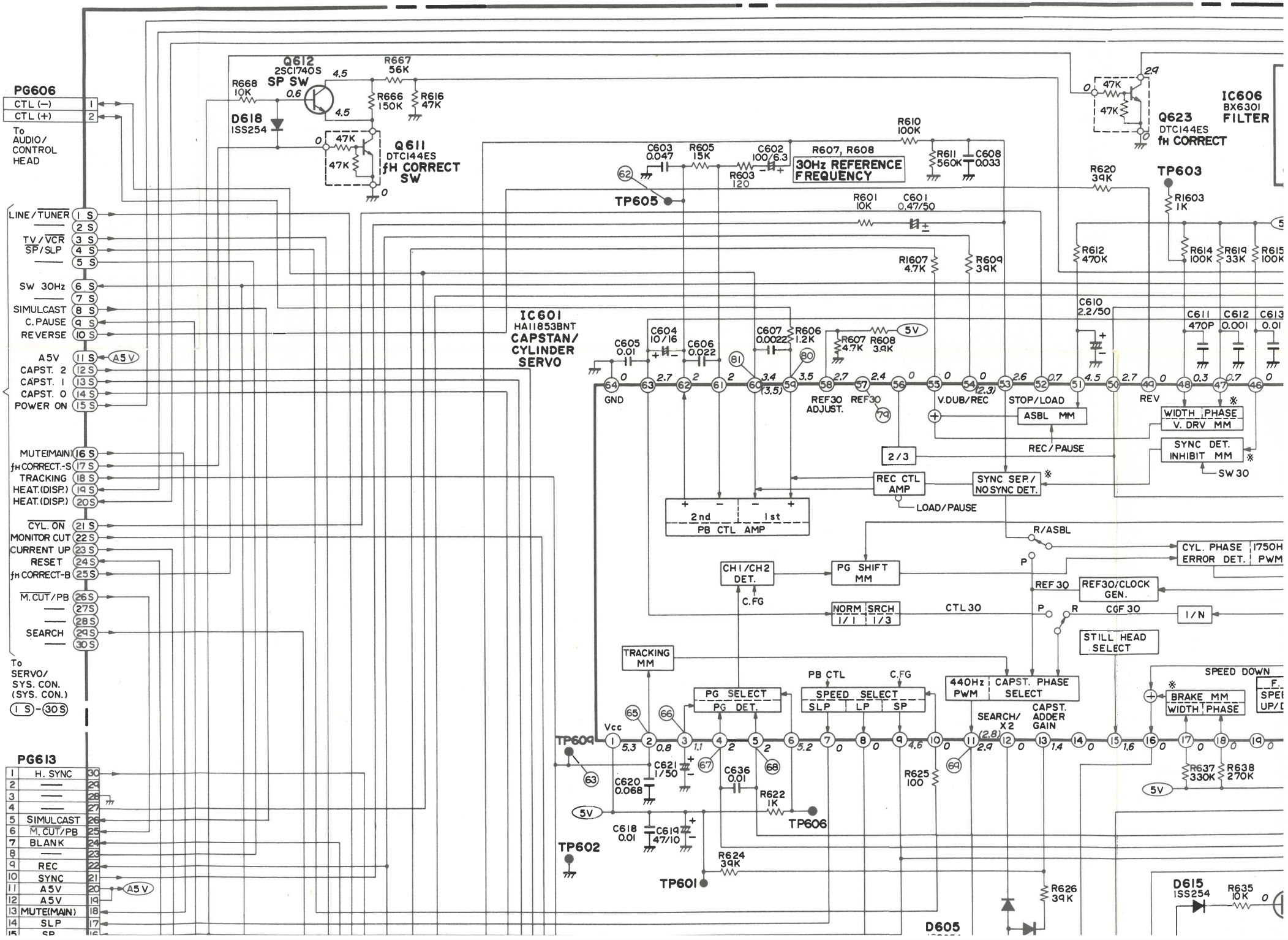
SERVO SCHEMATIC

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VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE





**2-M4**

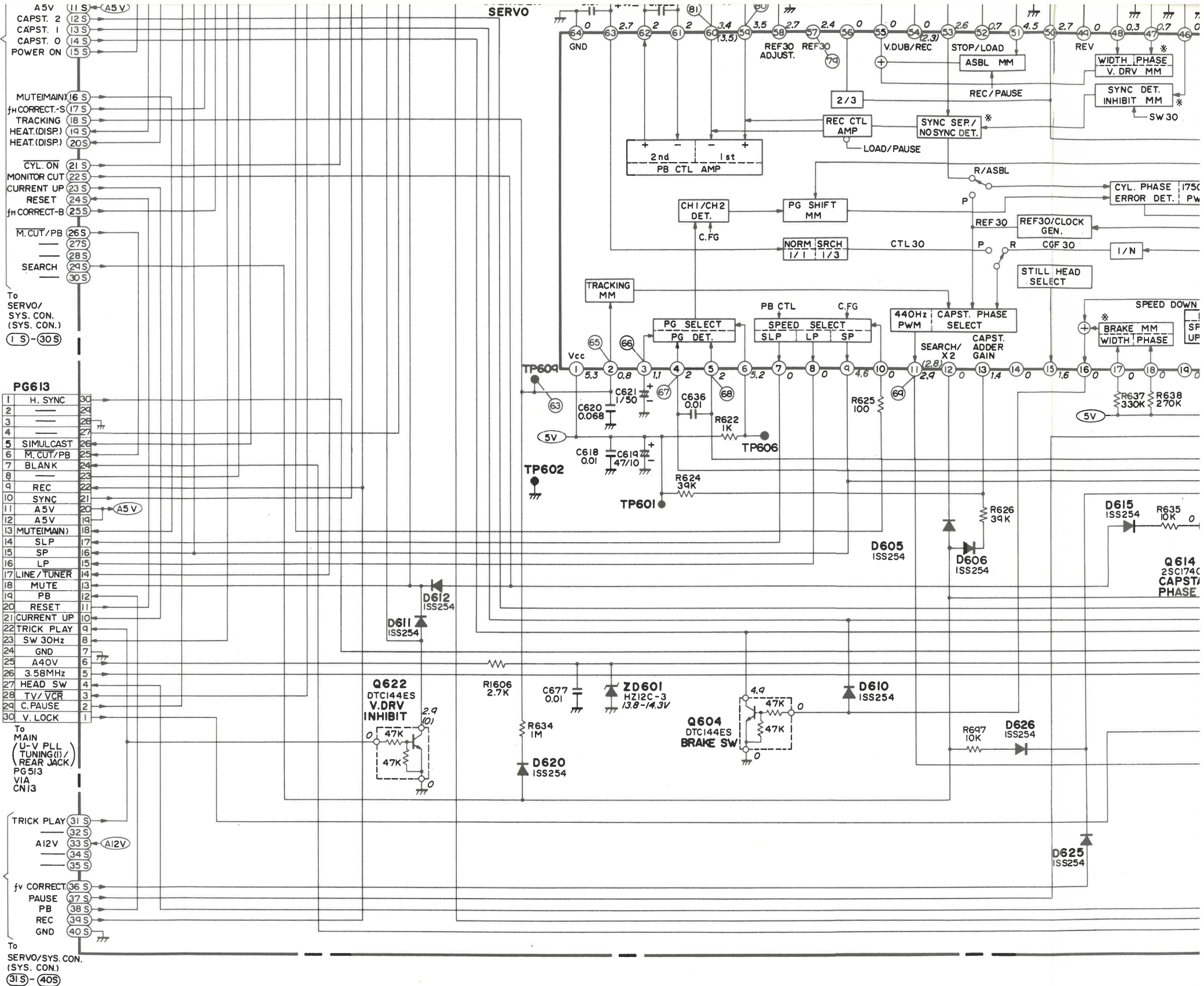
VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE

2-M1

2-M5

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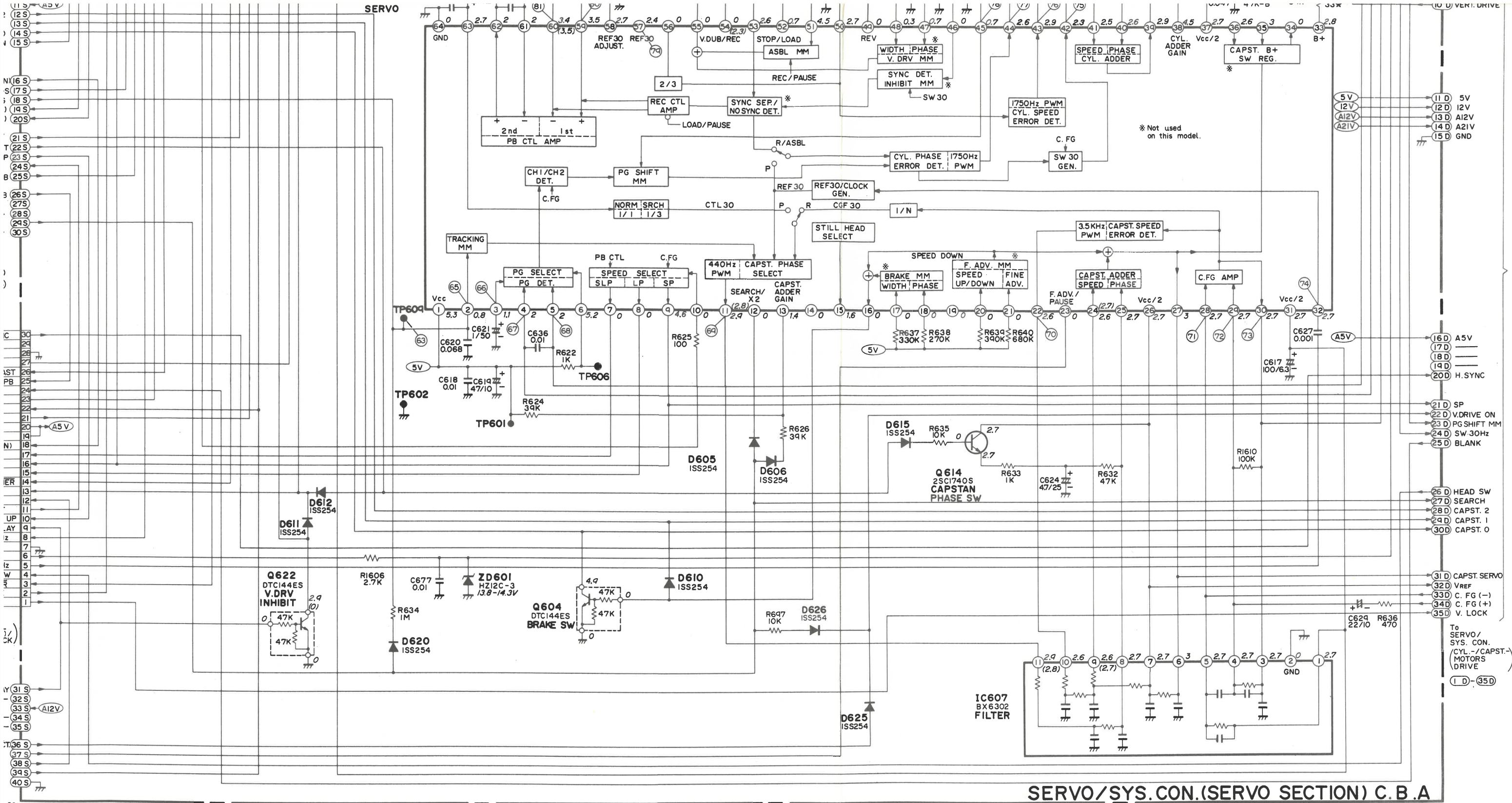
2-M5



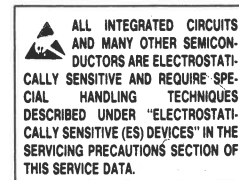
2-M6

2-M7





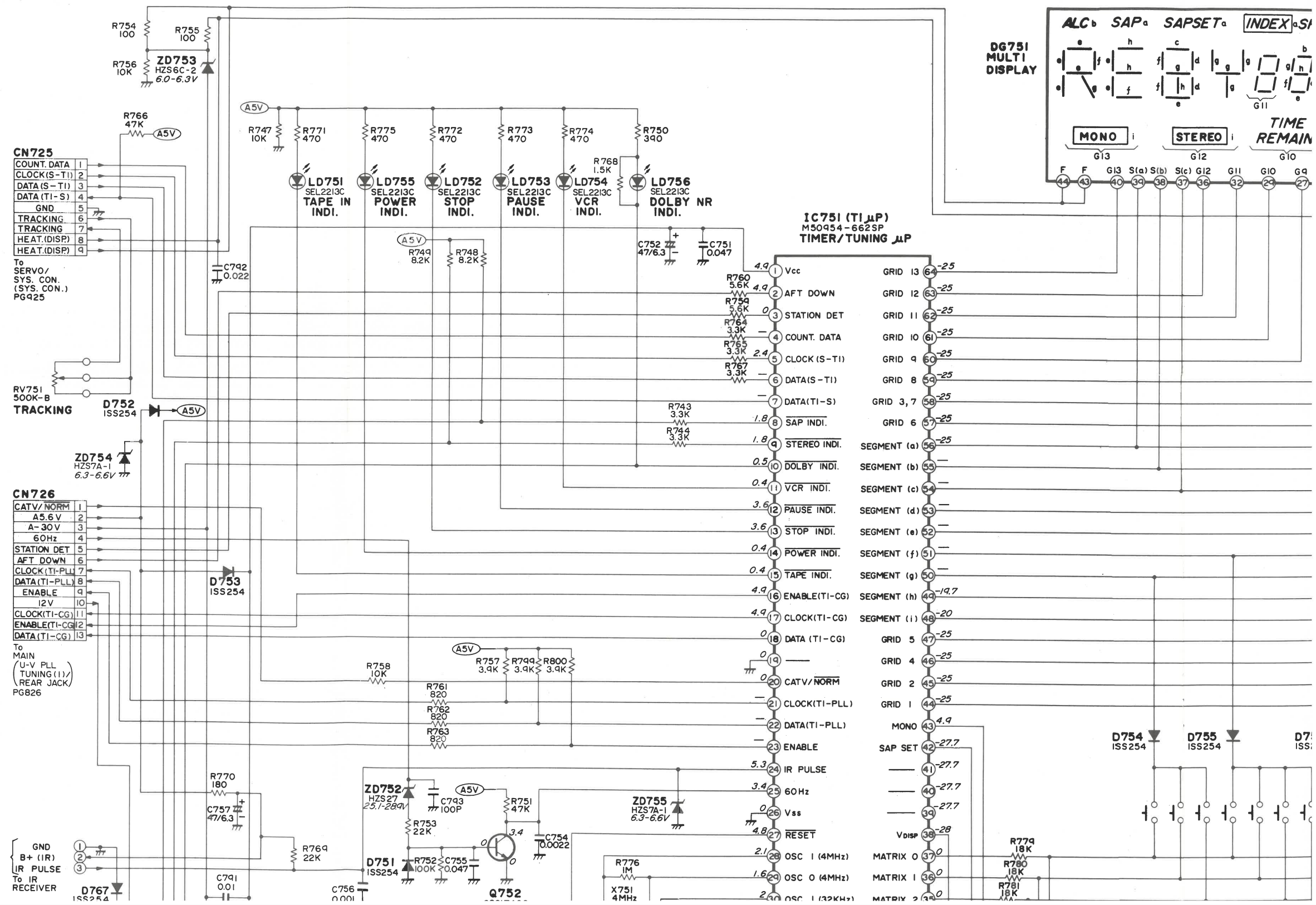
### TIMER/INPUT KEY/FUNCTION SWITCH SCHEMATIC



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VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE



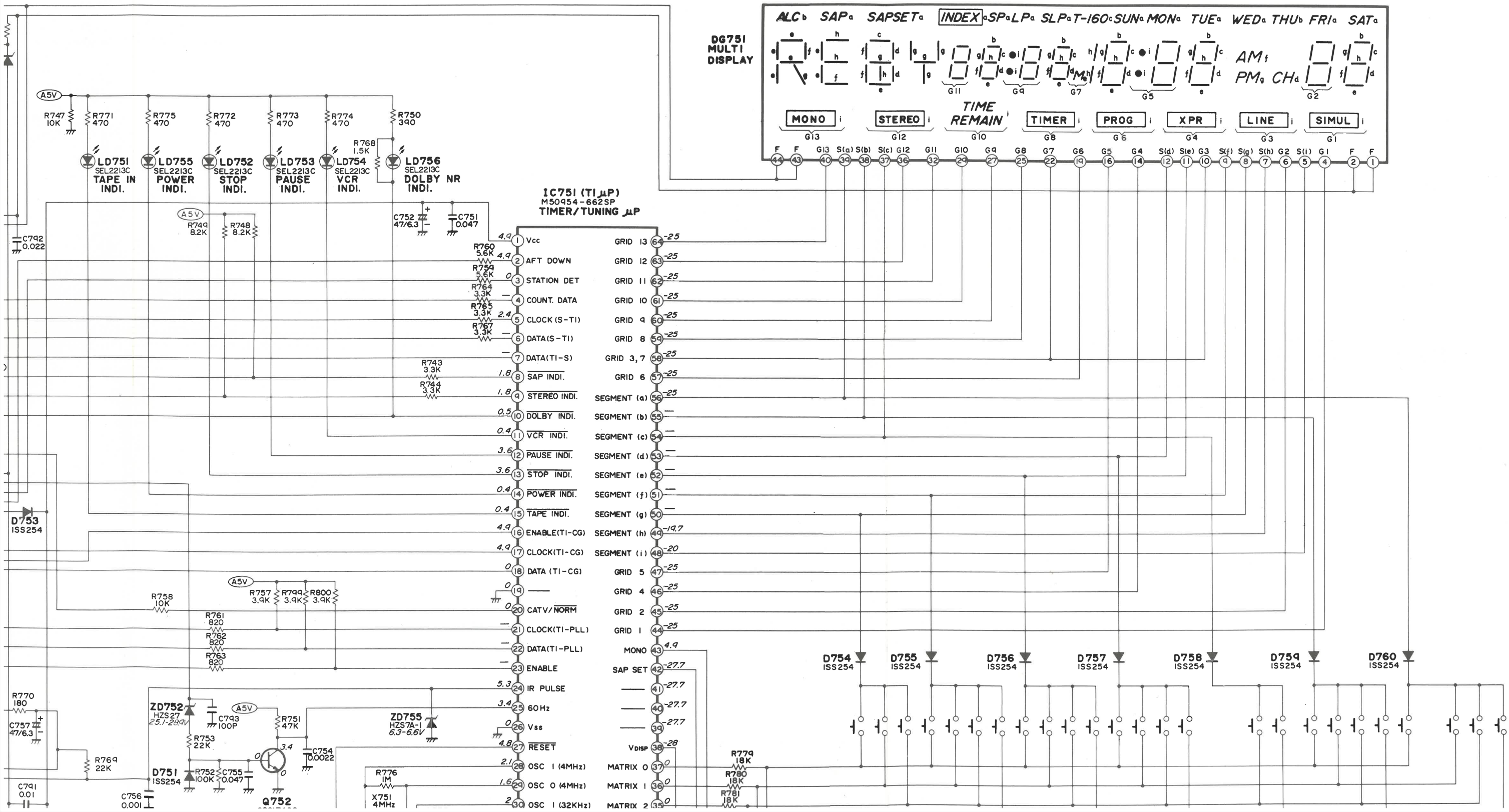


2-N2

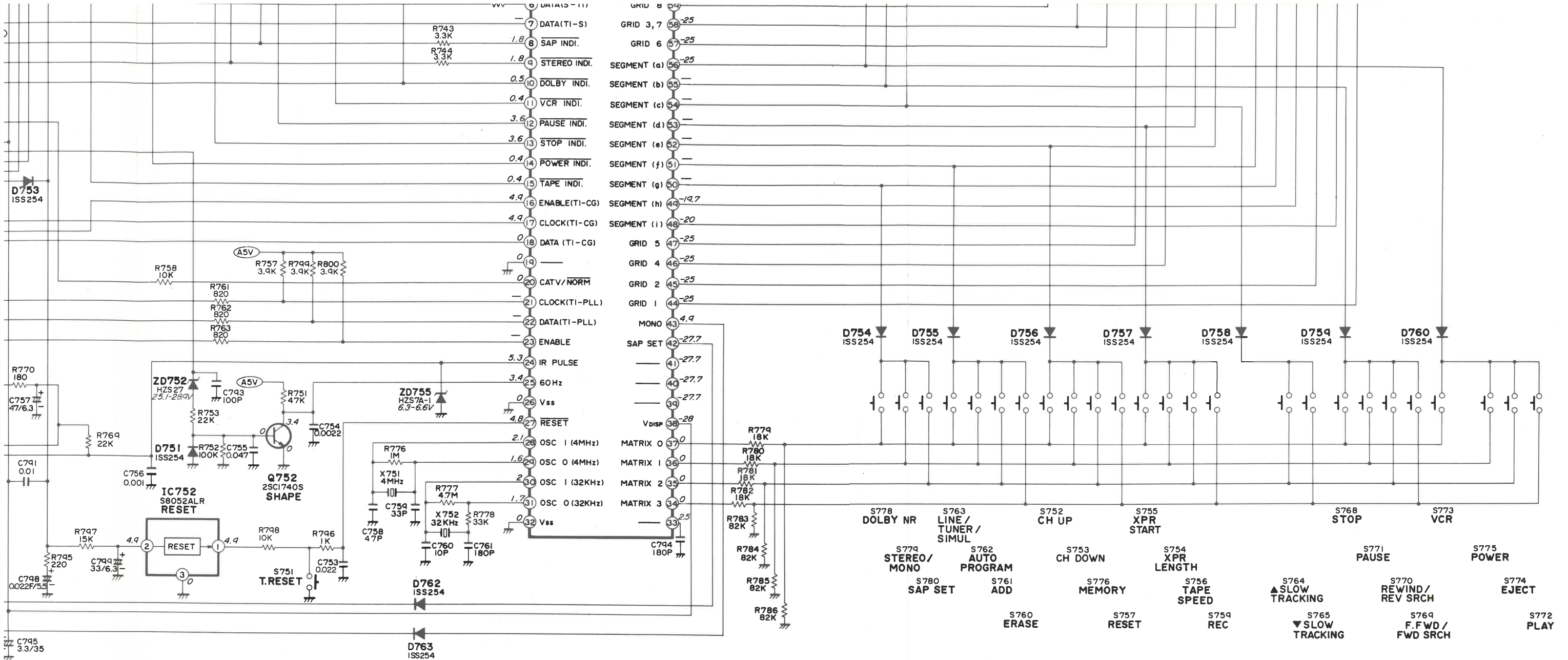
2-N3

2-N4

TIMER/INPUT KEY/FUNCTION SWITCH SCHEMATIC









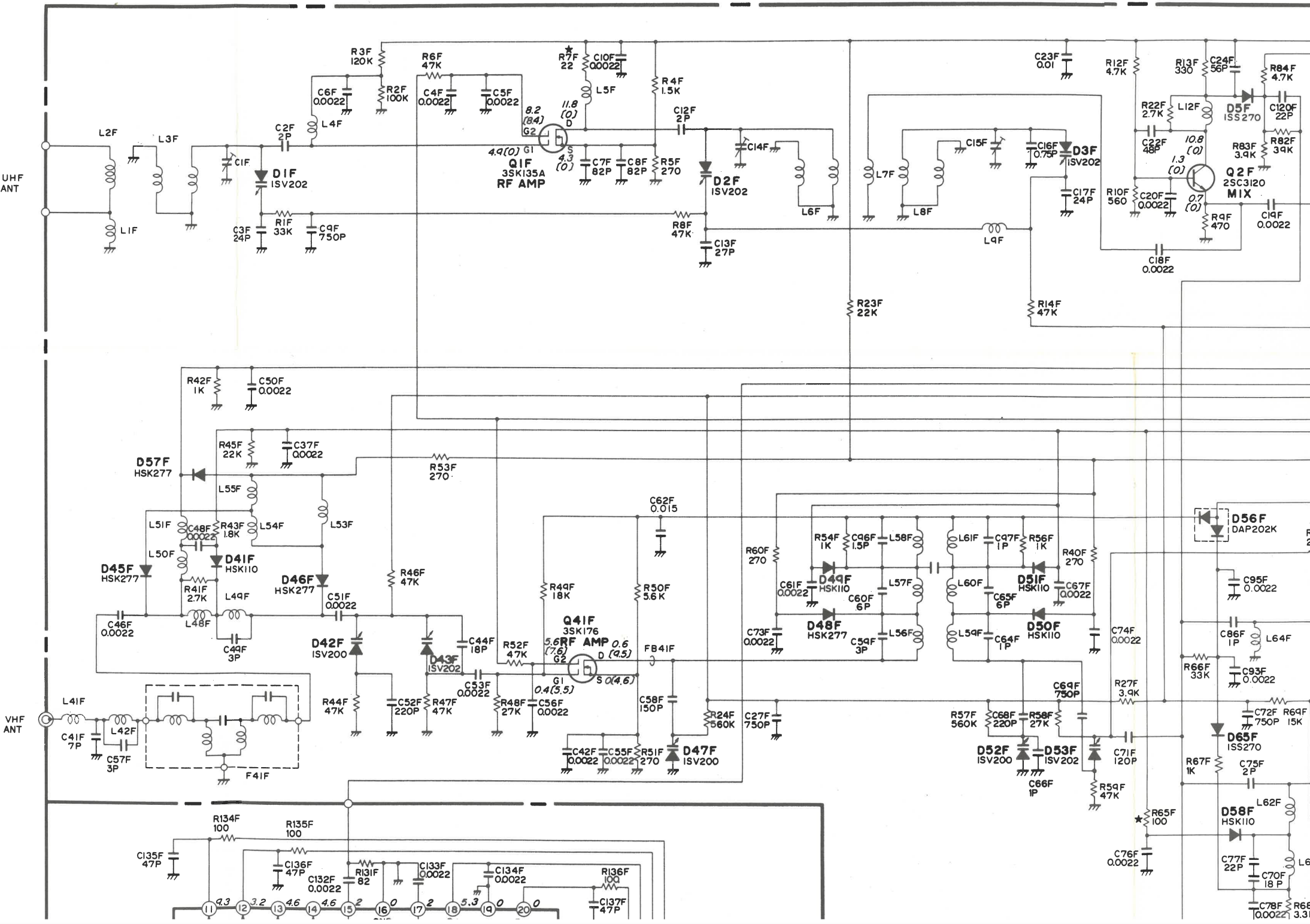
U-V TUNER/PLL TUNING SCHEMATIC

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VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE

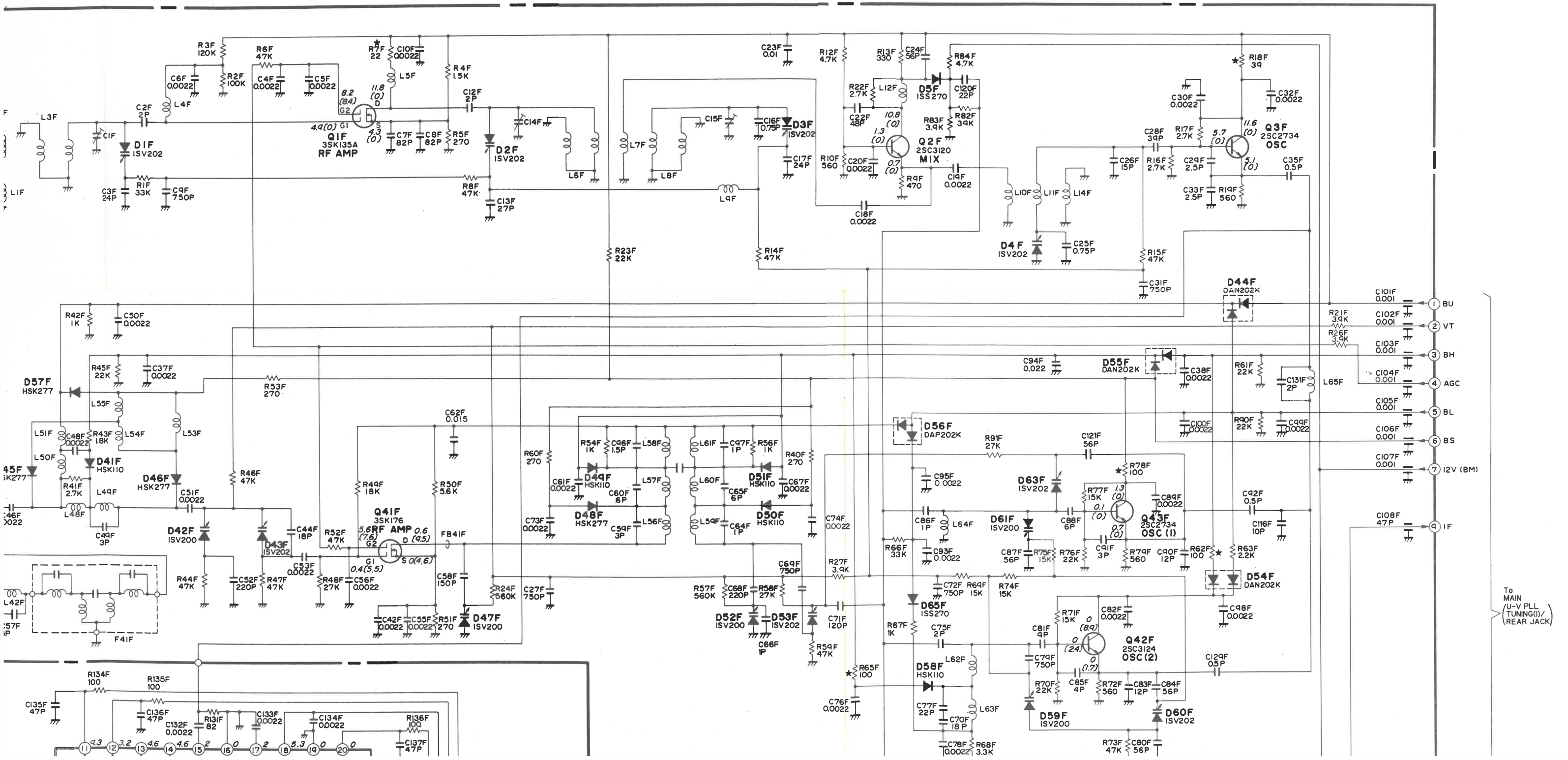


2-02

2-03

2-04

## U-V TUNER/PLL TUNING SCHEMATIC

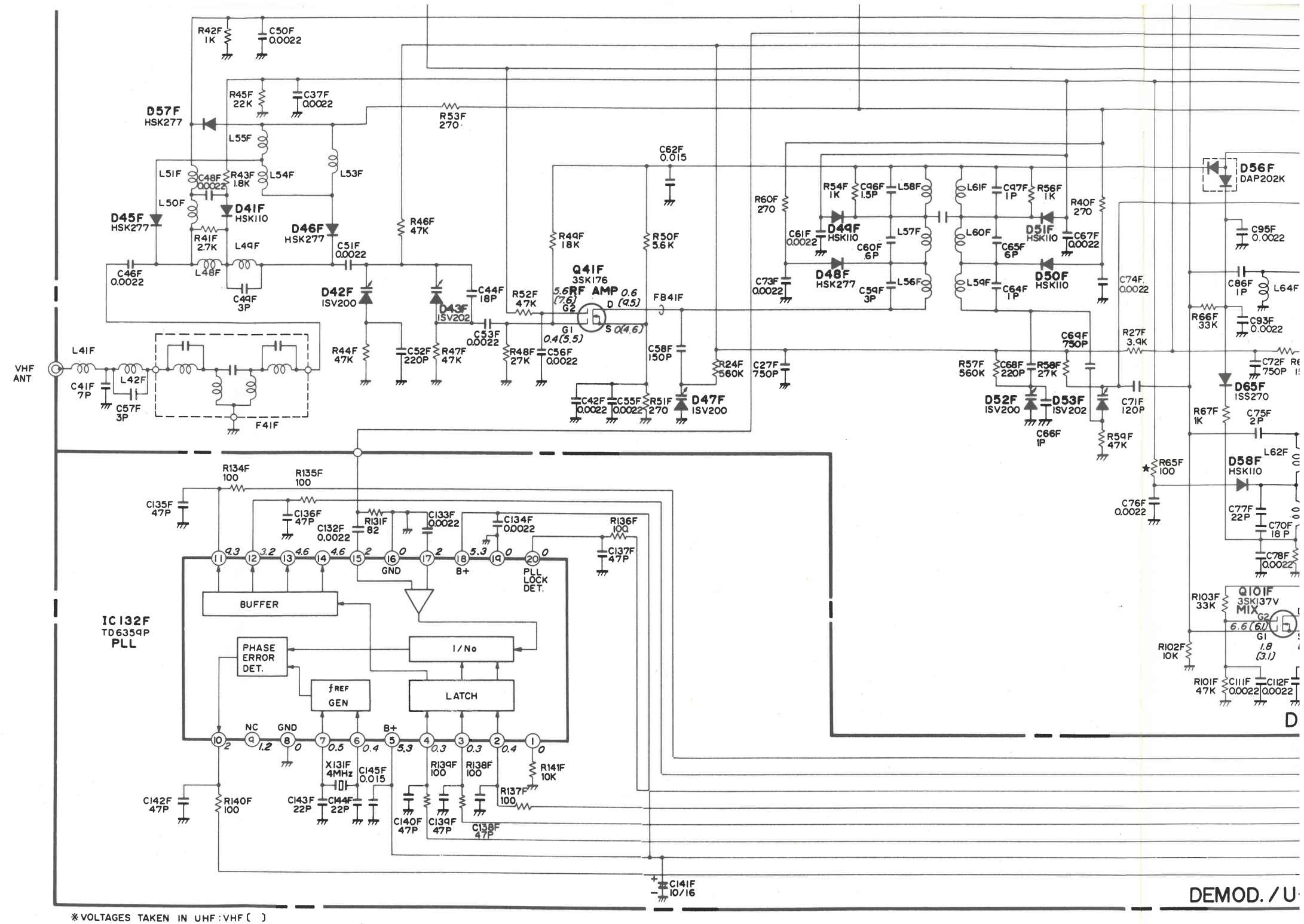




2-01

2-05

BLANK



2-05

2-06

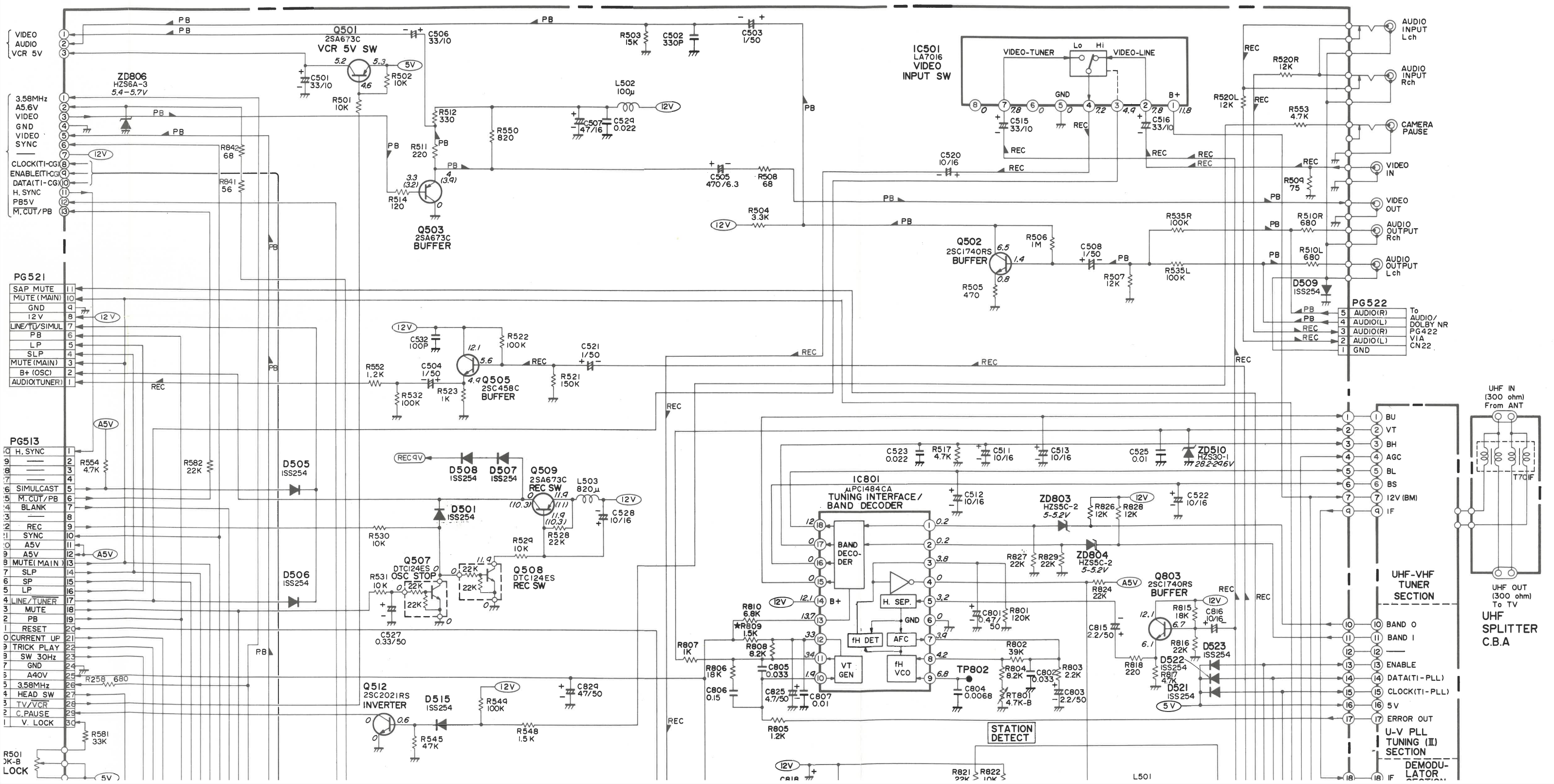
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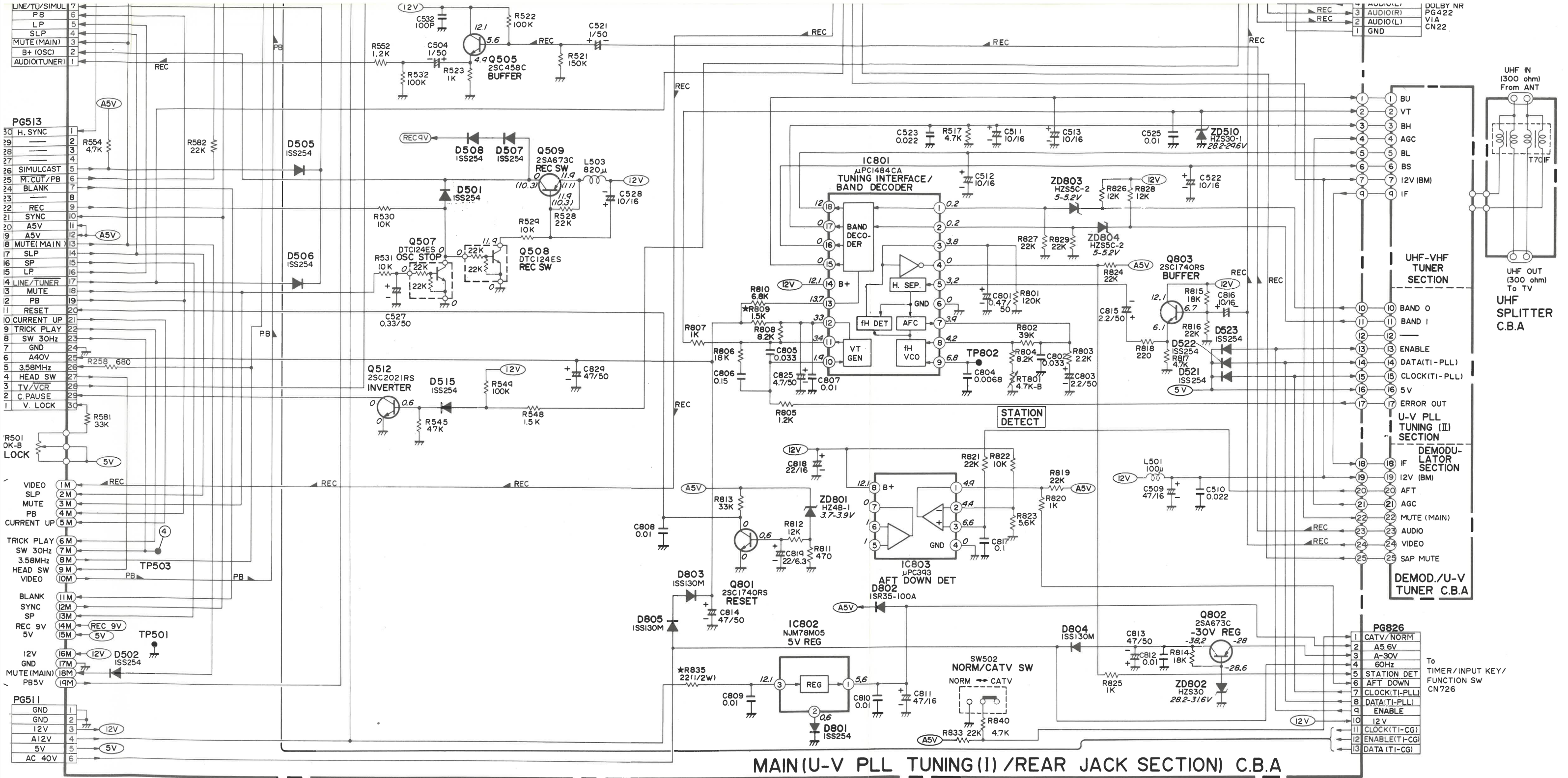
**2-P3**

## U-V PLL TUNING/REAR JACK





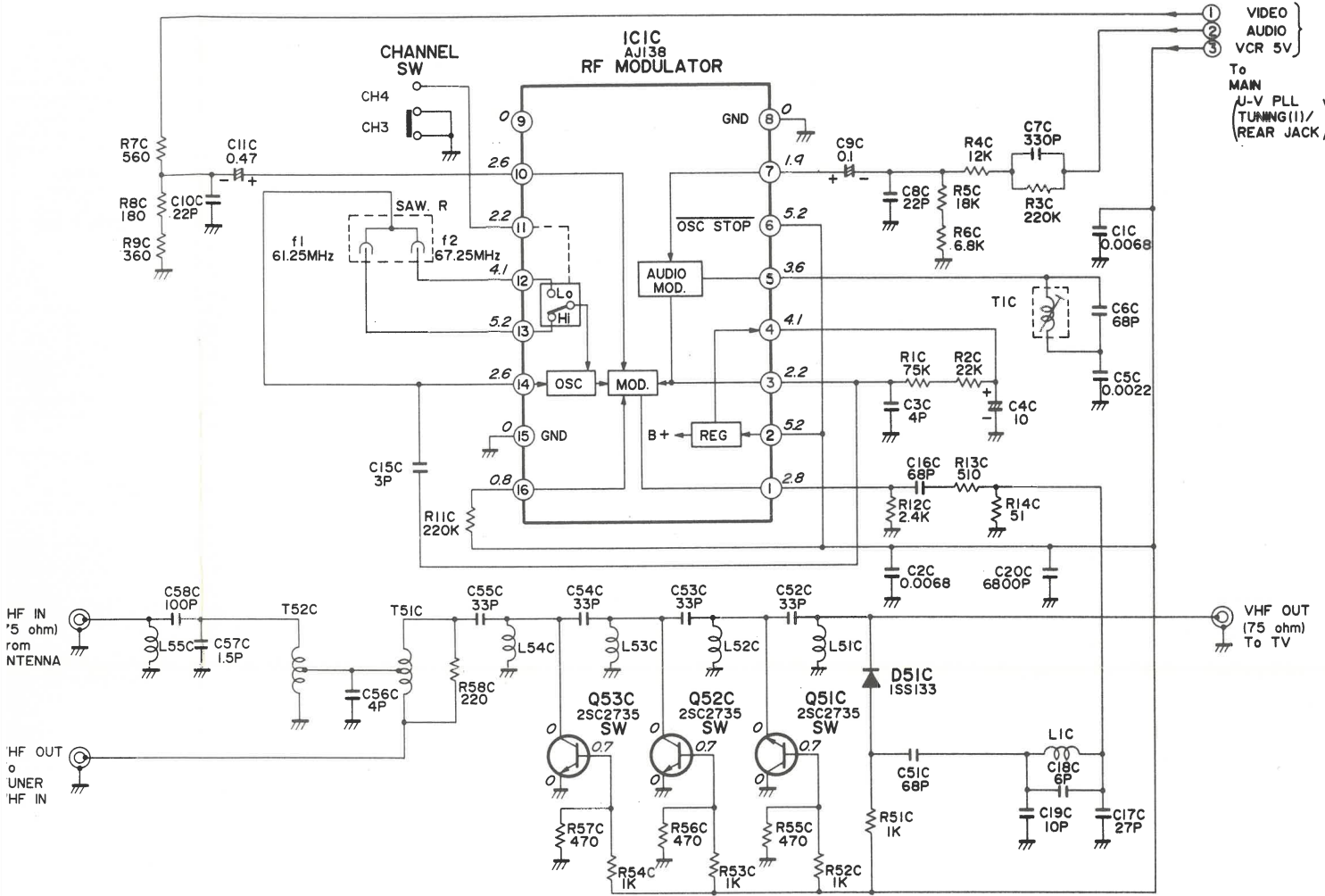








2-Q2  
RF MODULATOR/ANTENNA SWITCH/VHF SPLITTER SCHEMATIC



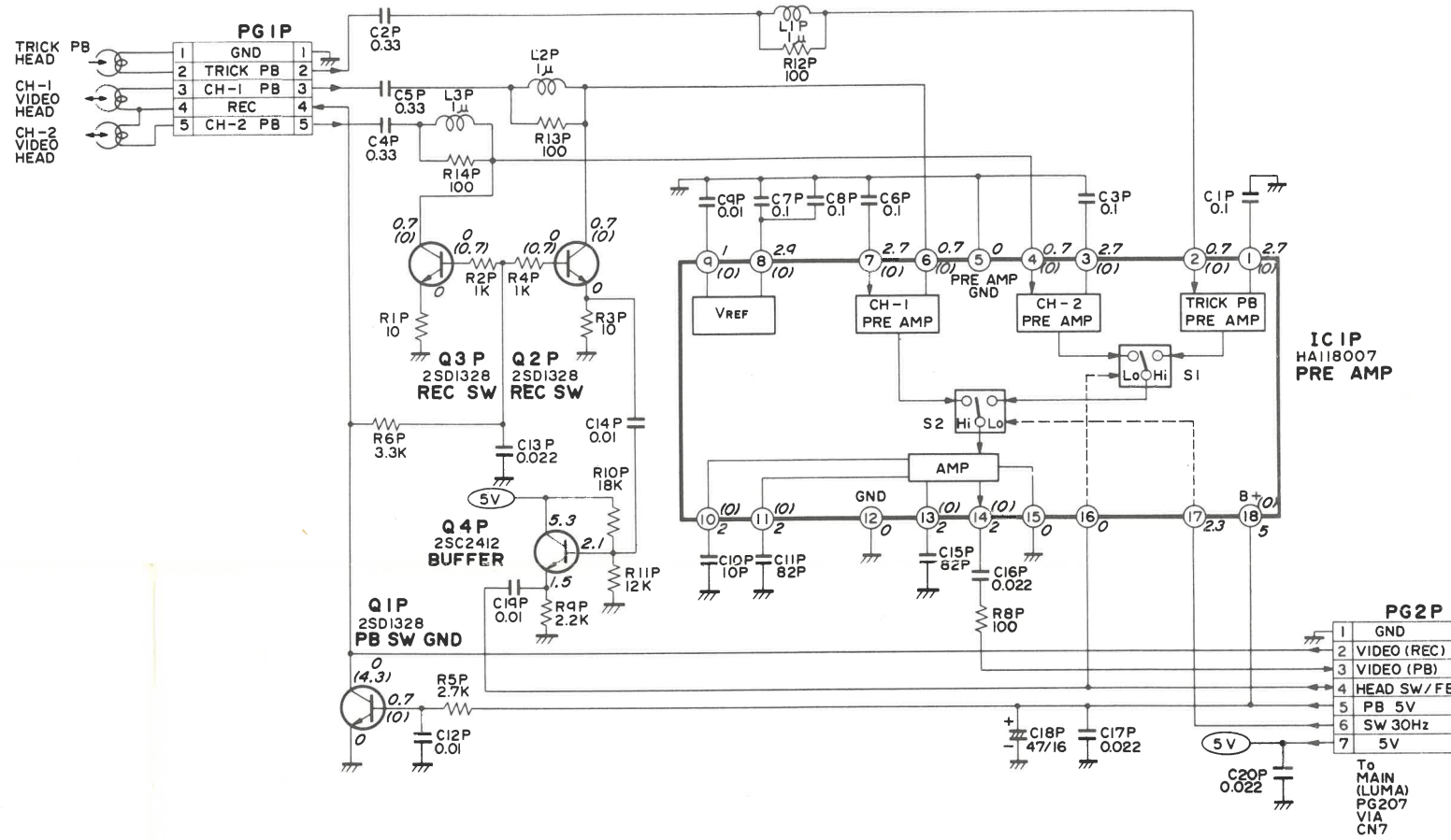
2-Q3

2-Q7

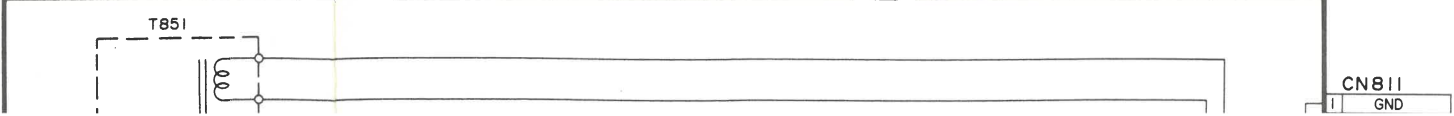
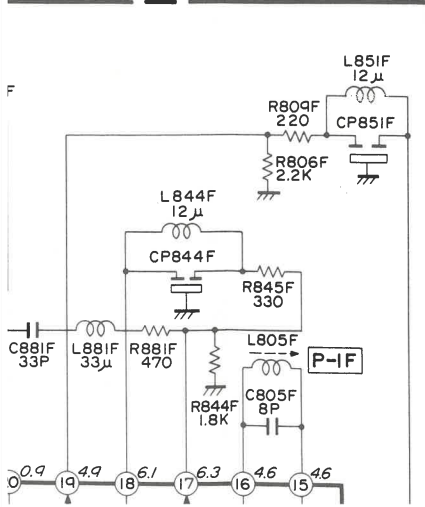
2-Q4

2-Q8

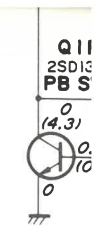
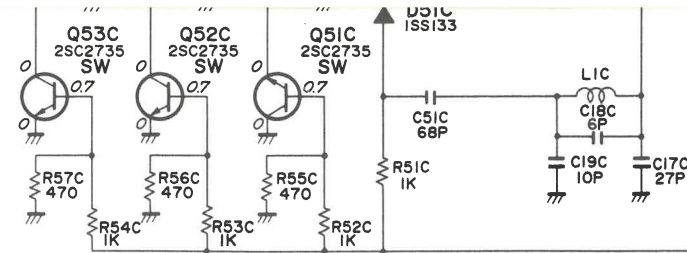
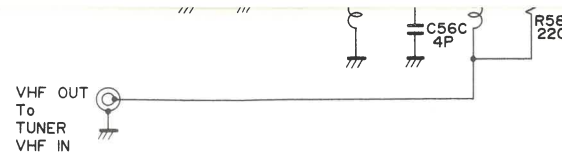
PREAMP/HEAD SWITCHING SCHEMATIC



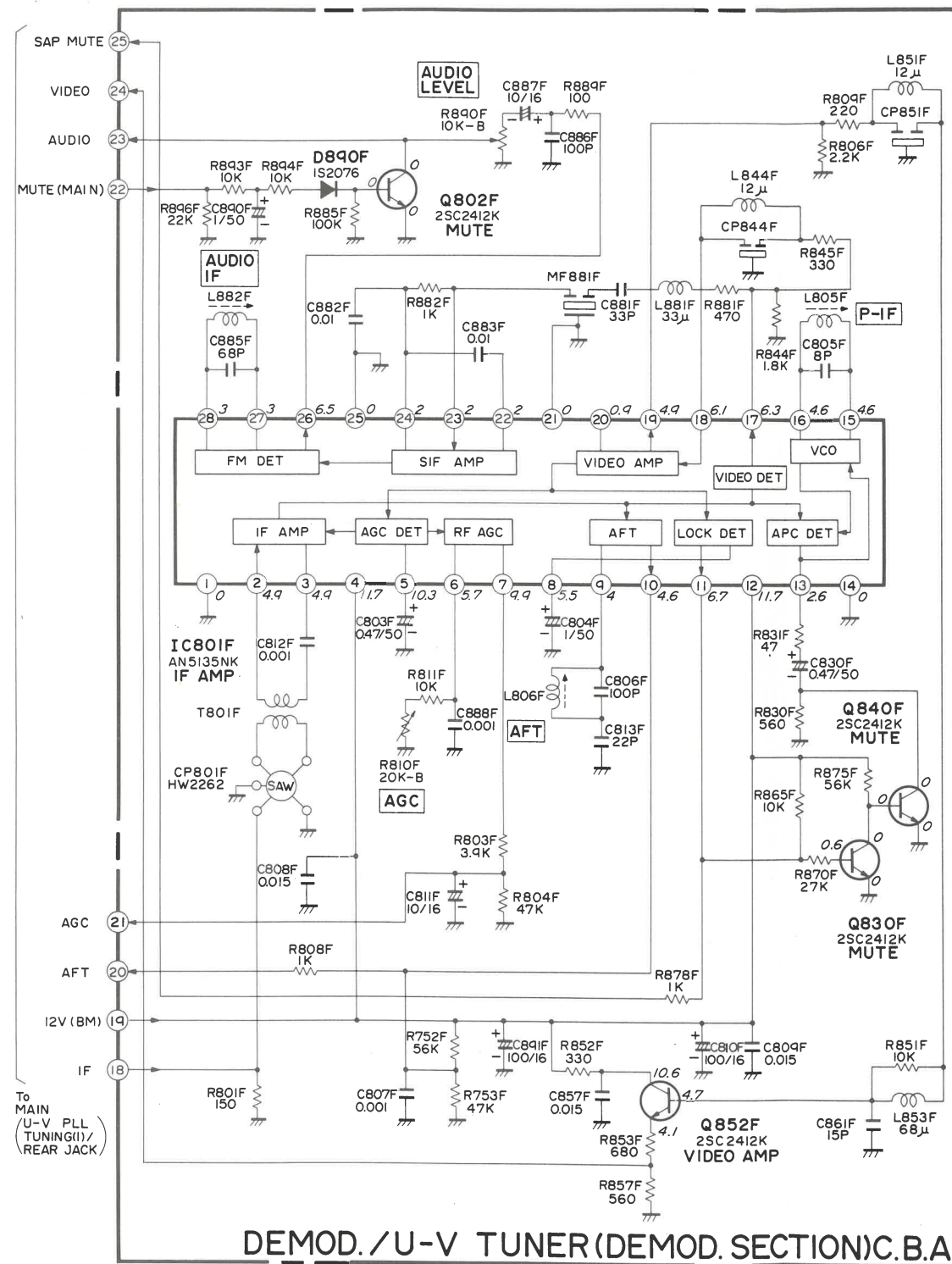
REGULATOR SCHEMATIC



VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE



### DEMODULATOR SCHEMATIC



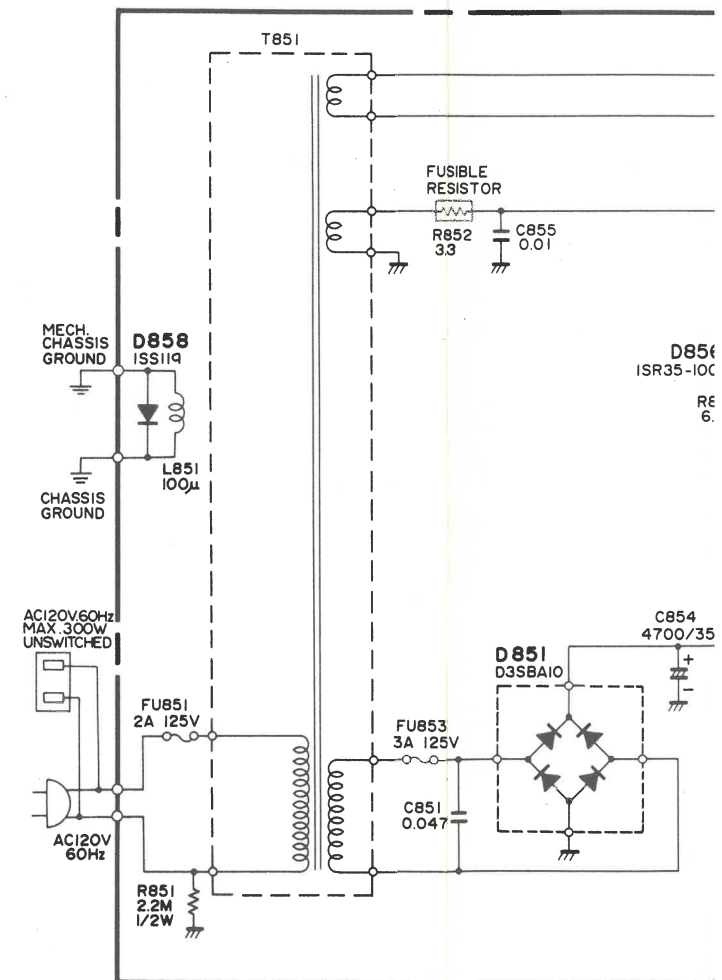
2-Q5

2-Q6

2-Q3

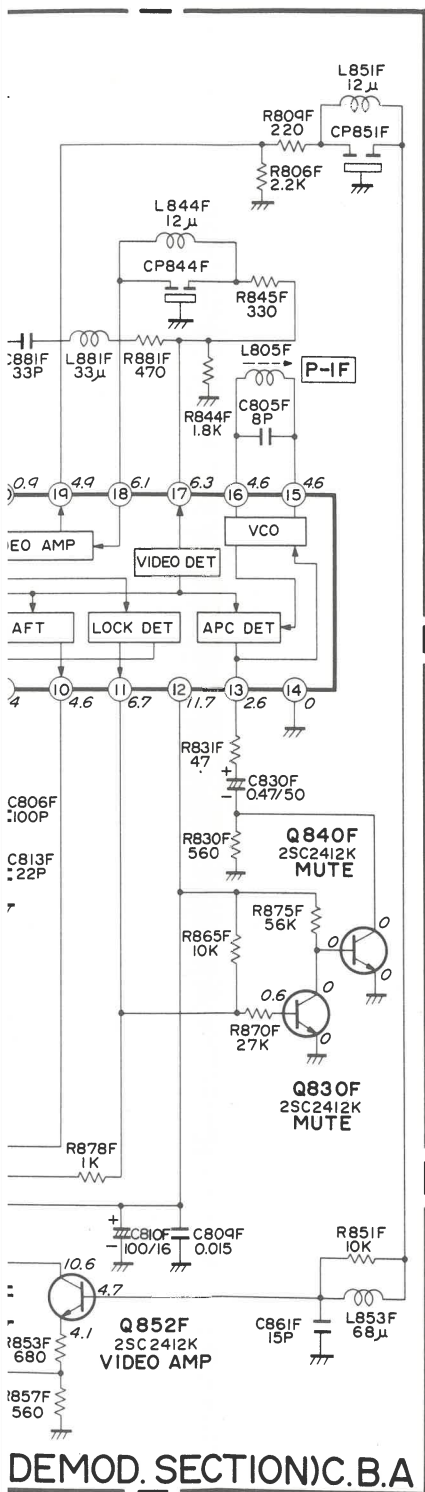
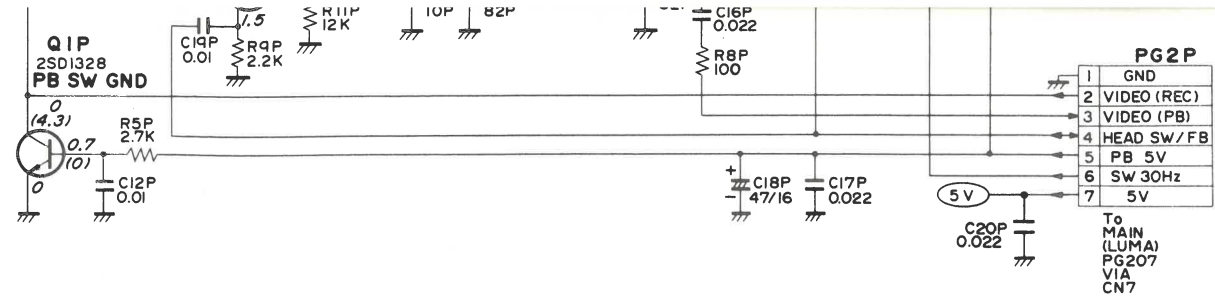
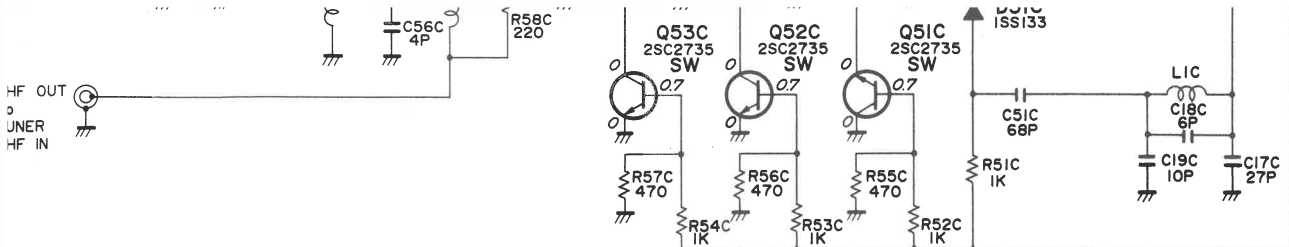
2-Q7

REG



2-Q7





2-Q6

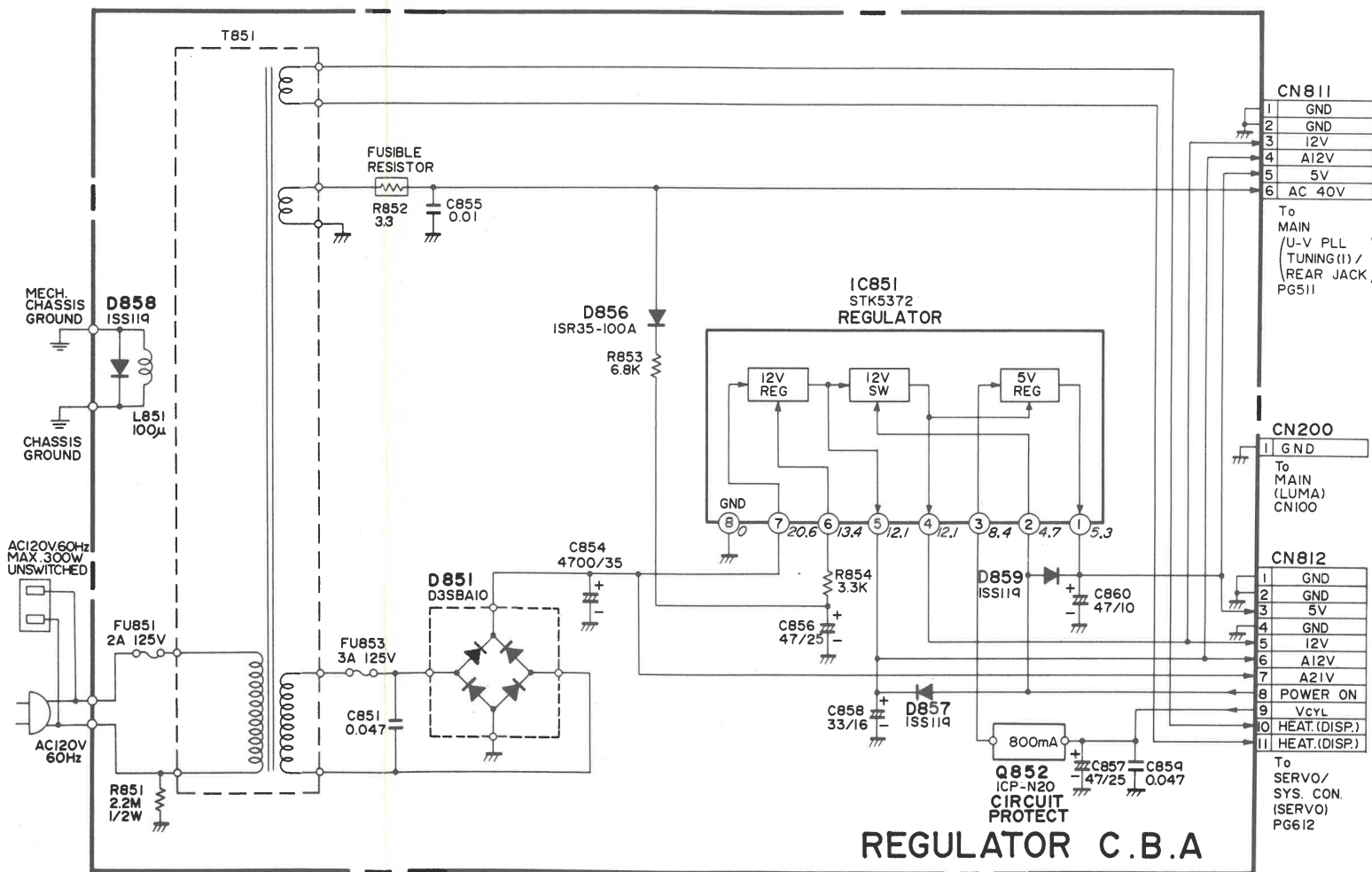
2-Q3

2-Q7

2-Q4

2-Q8

# REGULATOR SCHEMATIC



2-Q7

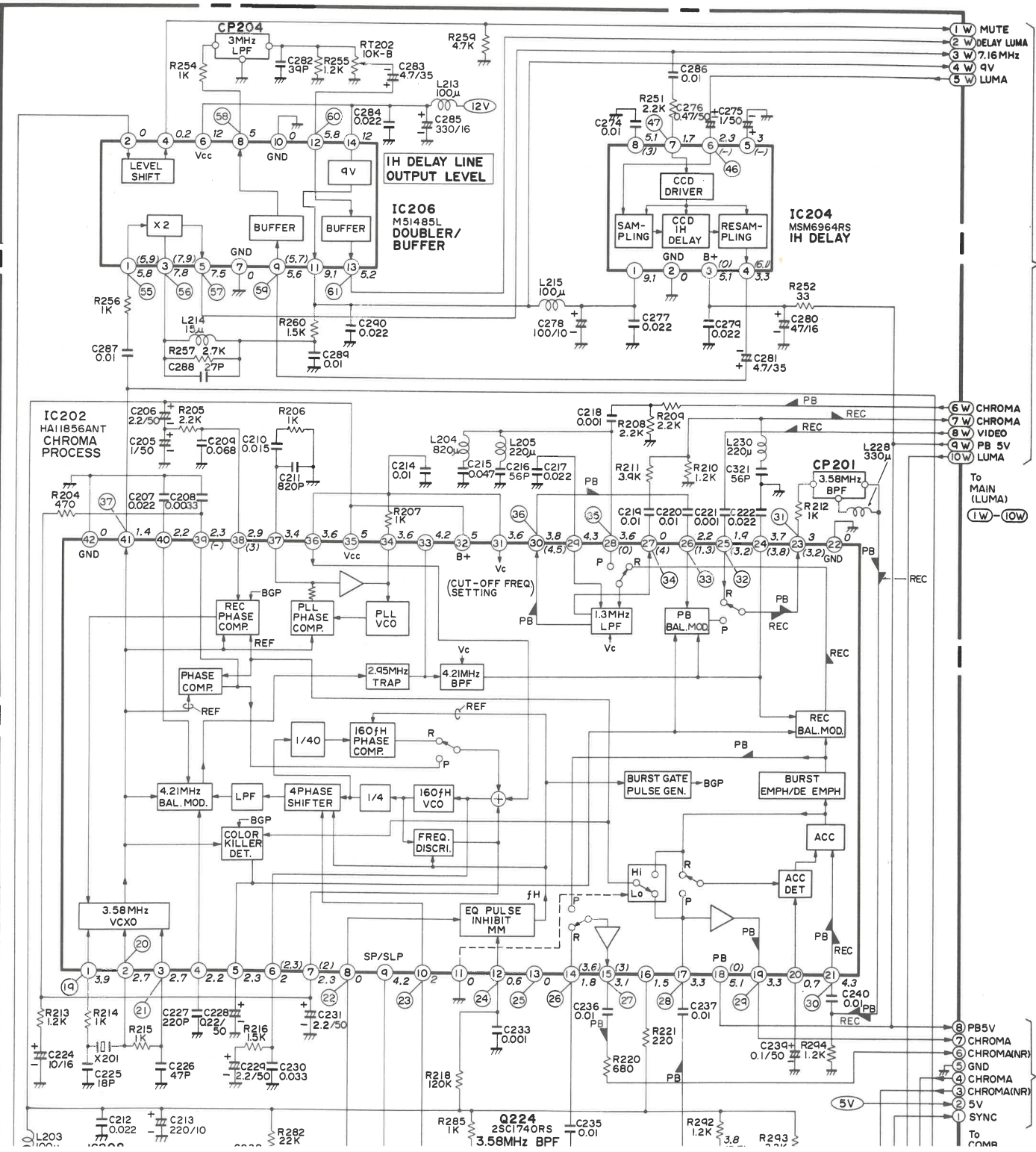
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SERVICING PRECAUTIONS SECTION OF THIS SERVICE DATA.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

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VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE

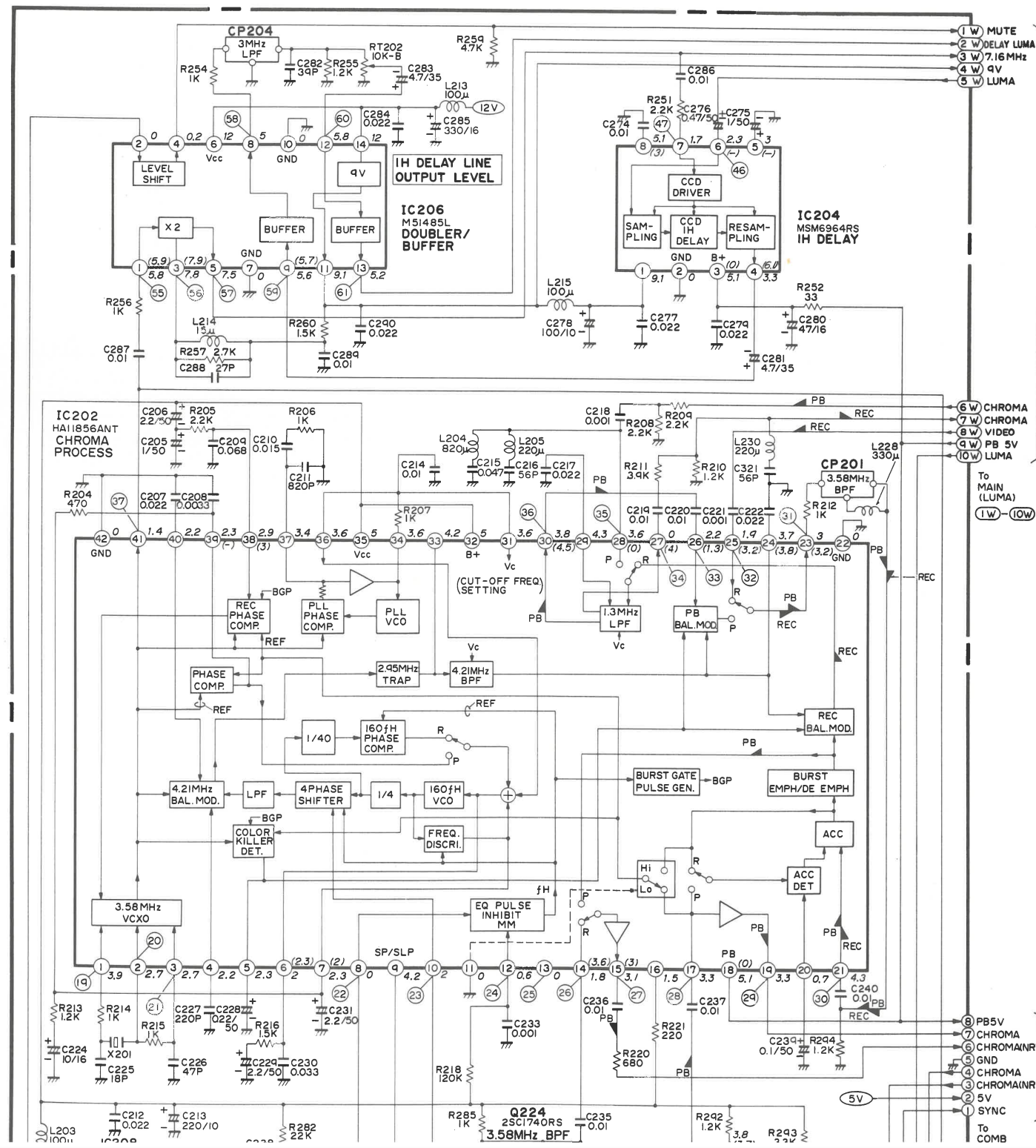
CHROMINANCE SCHEMATIC





2-V2

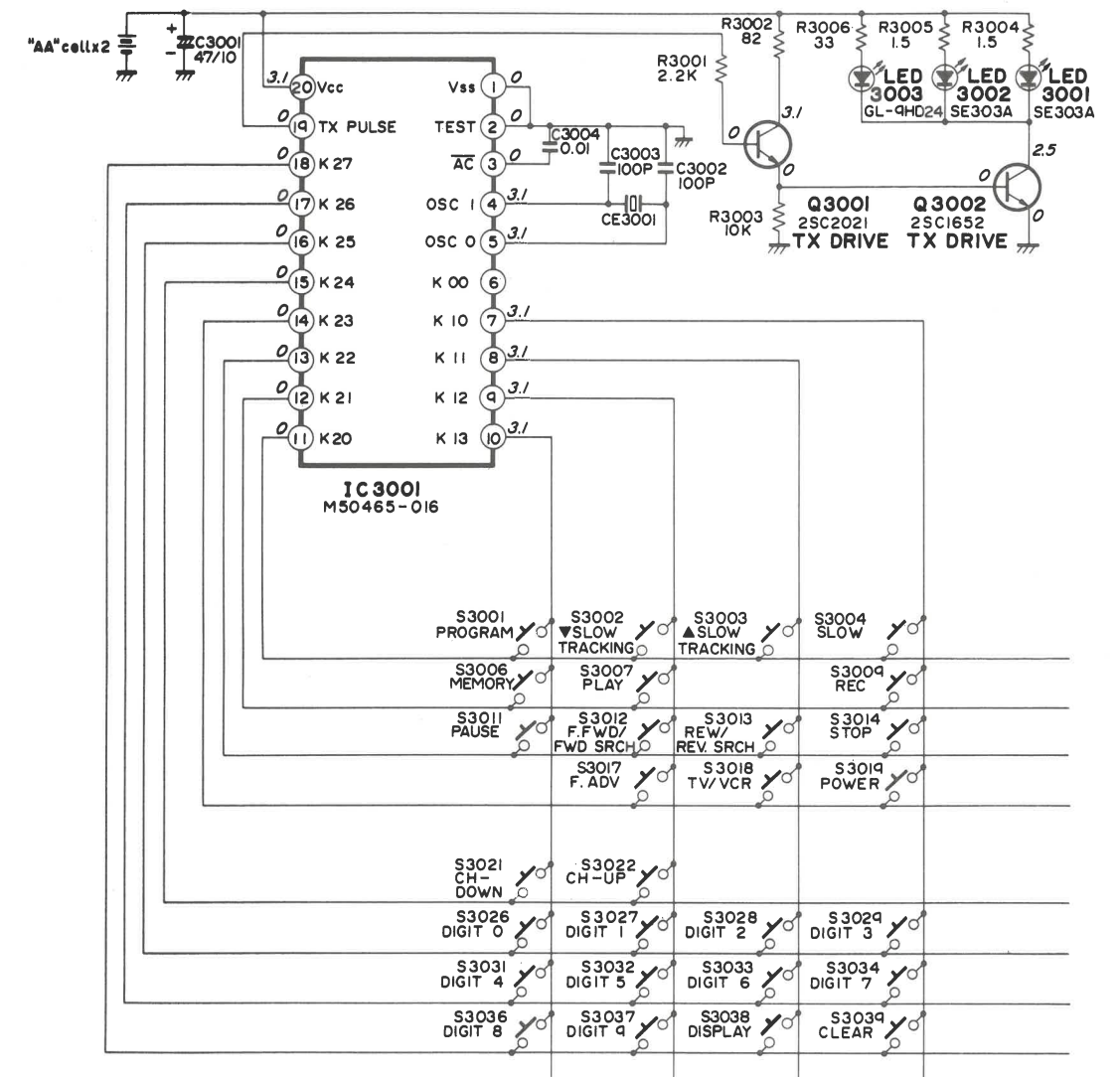
## CHROMINANCE SCHEMATIC



2-V3

2-V4

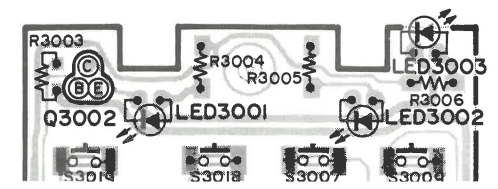
## REMOTE CONTROL (TX) SCHEMATIC



2-V4

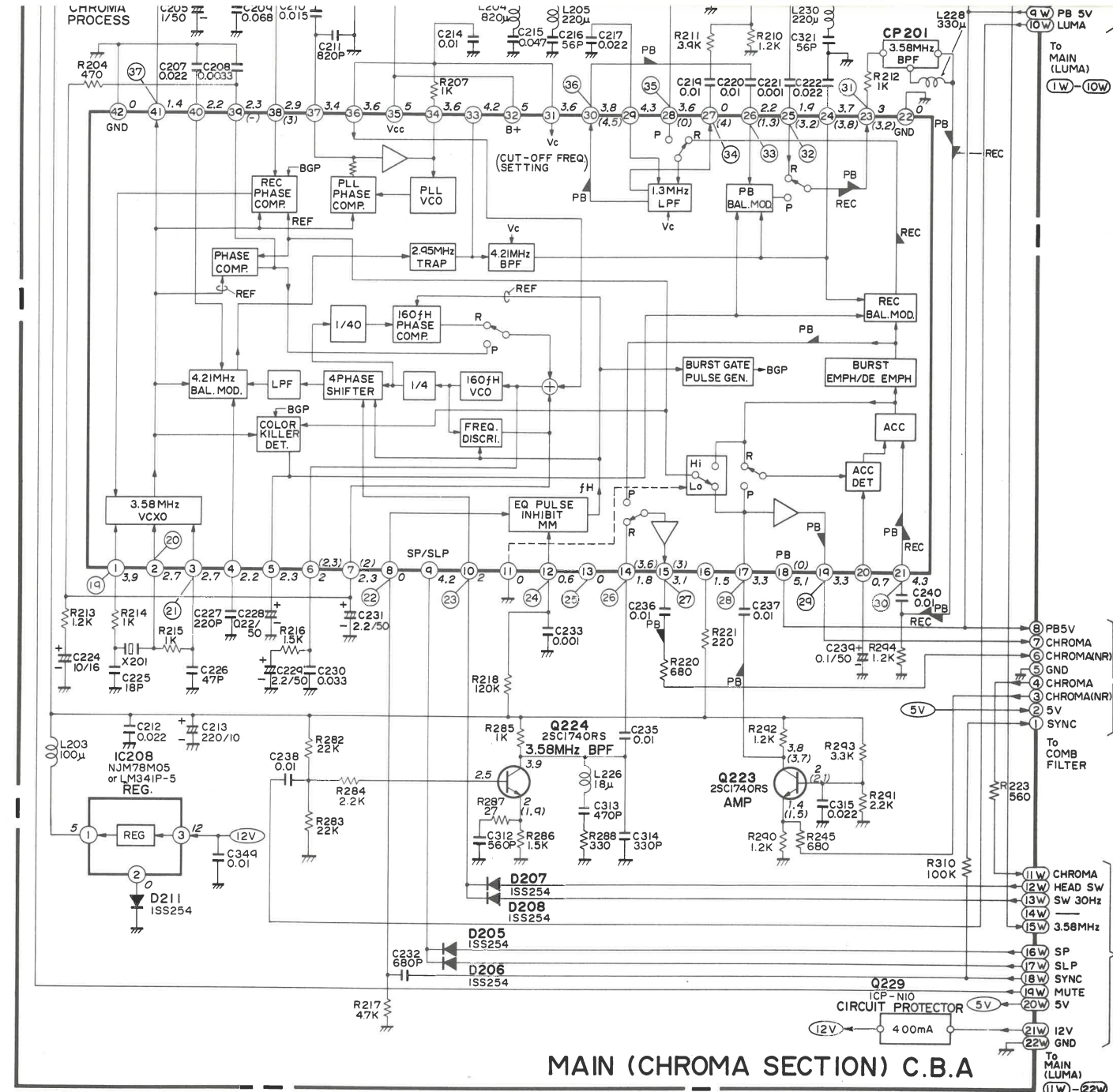
2-V8

## REMOTE CONTROL (TX) CIRCUIT BOARD



**2-V5**

**BLANK**



**2-V7**





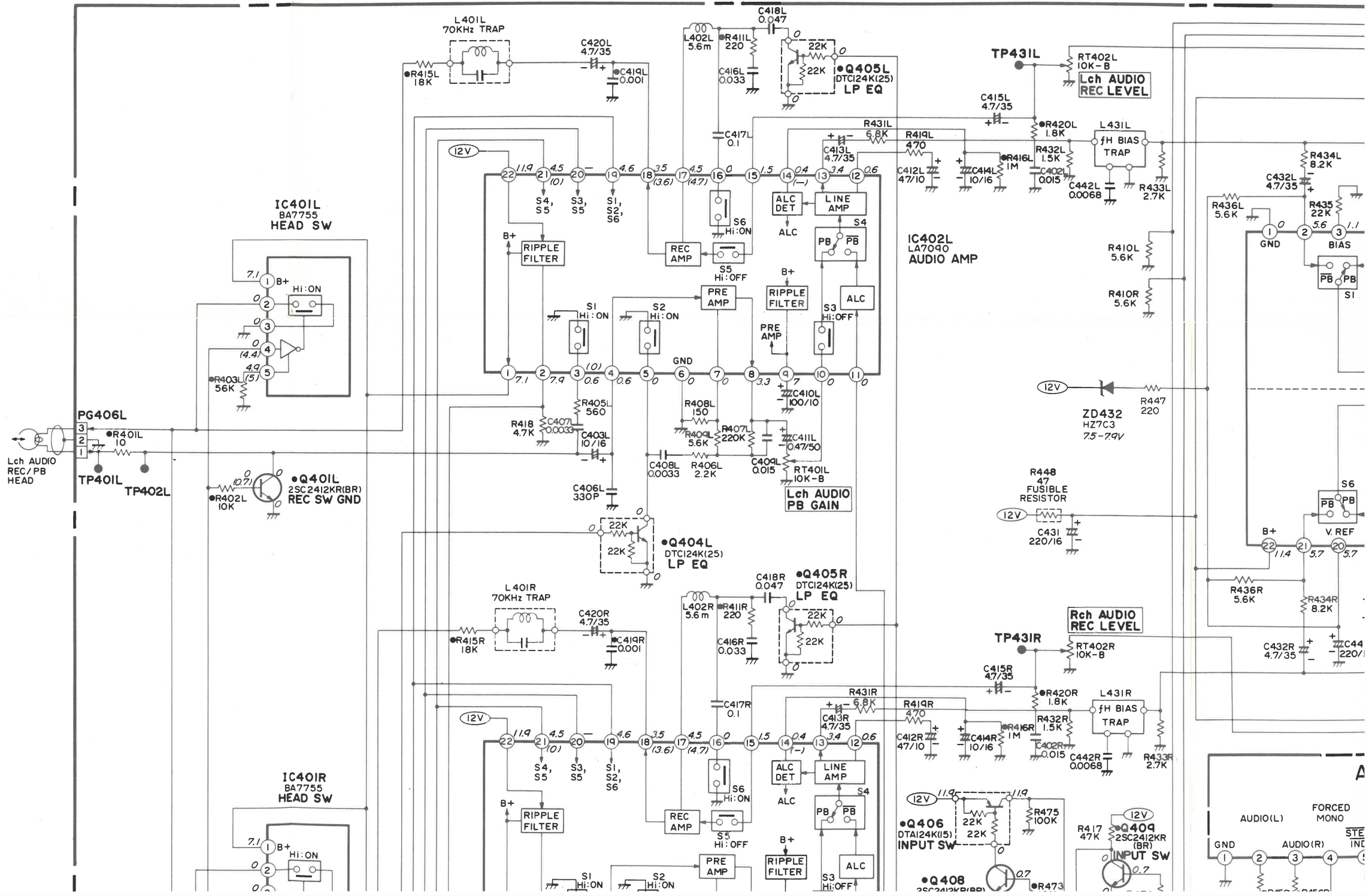
AUDIO DOLBY SCHEMATIC

ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SERVICING PRECAUTIONS SECTION OF THIS SERVICE DATA.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

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VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE



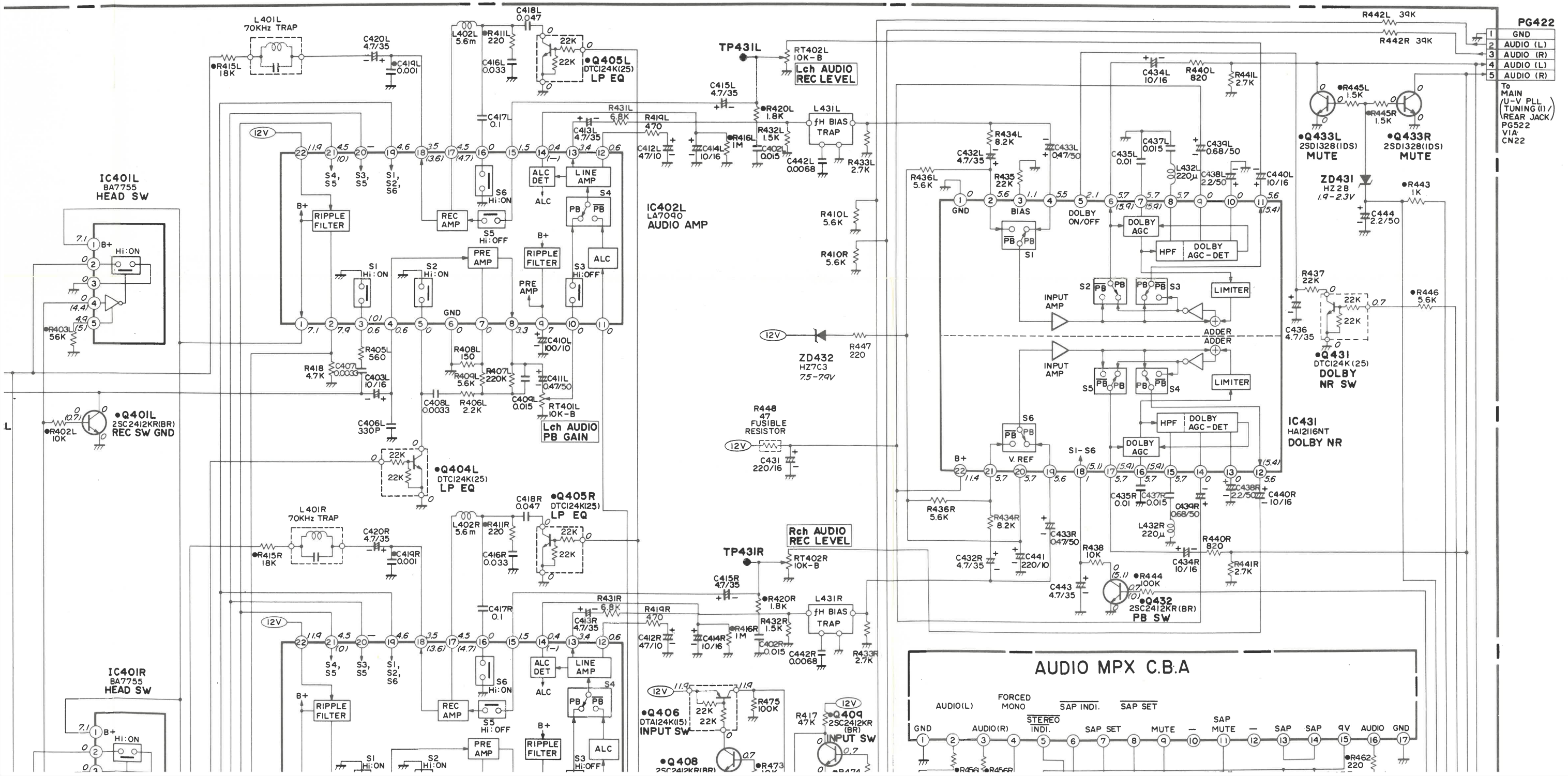


**2-W2**

**2-W3**

**2-W4**

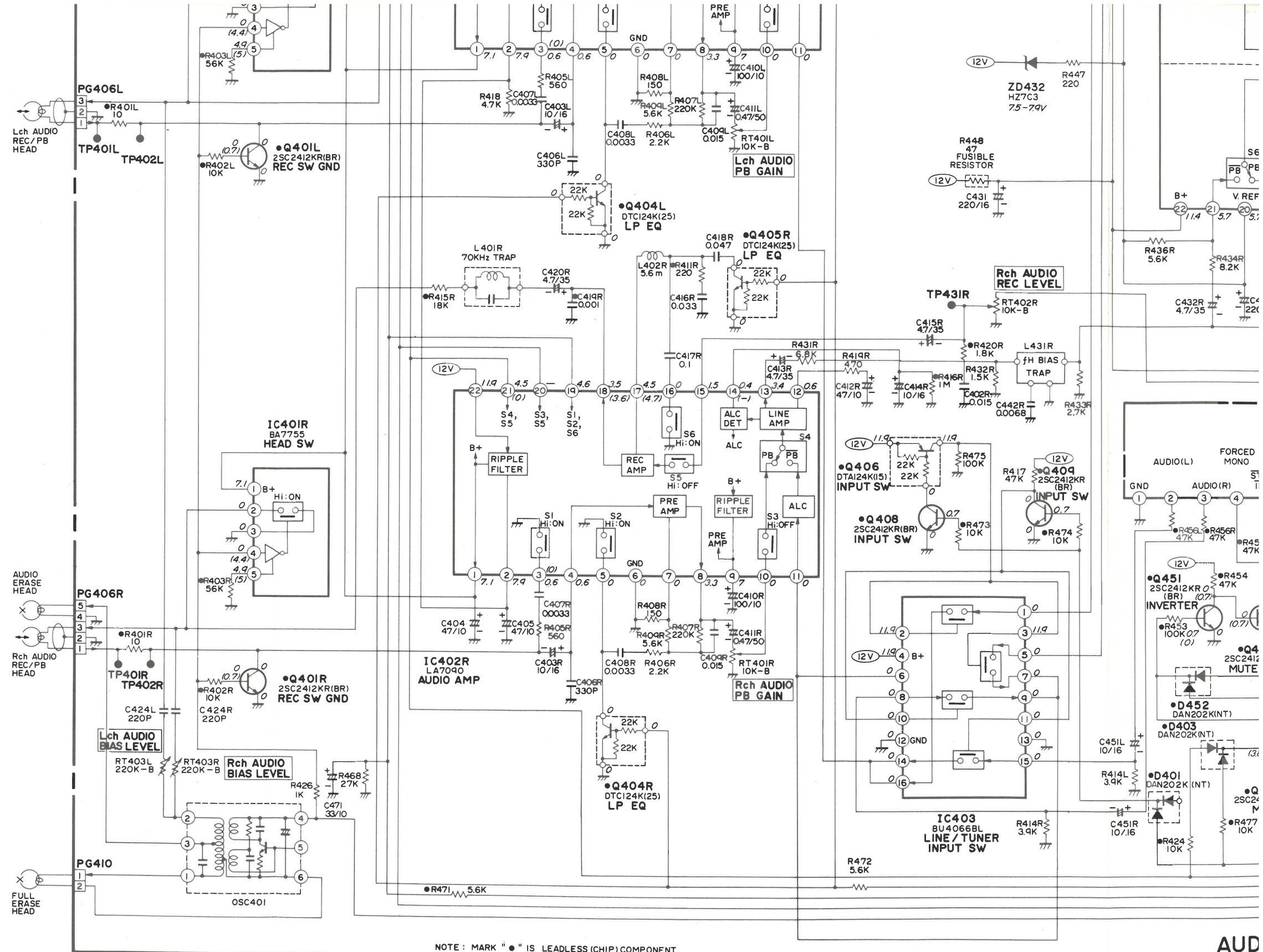
### AUDIO DOLBY SCHEMATIC





2-W1

2-W5



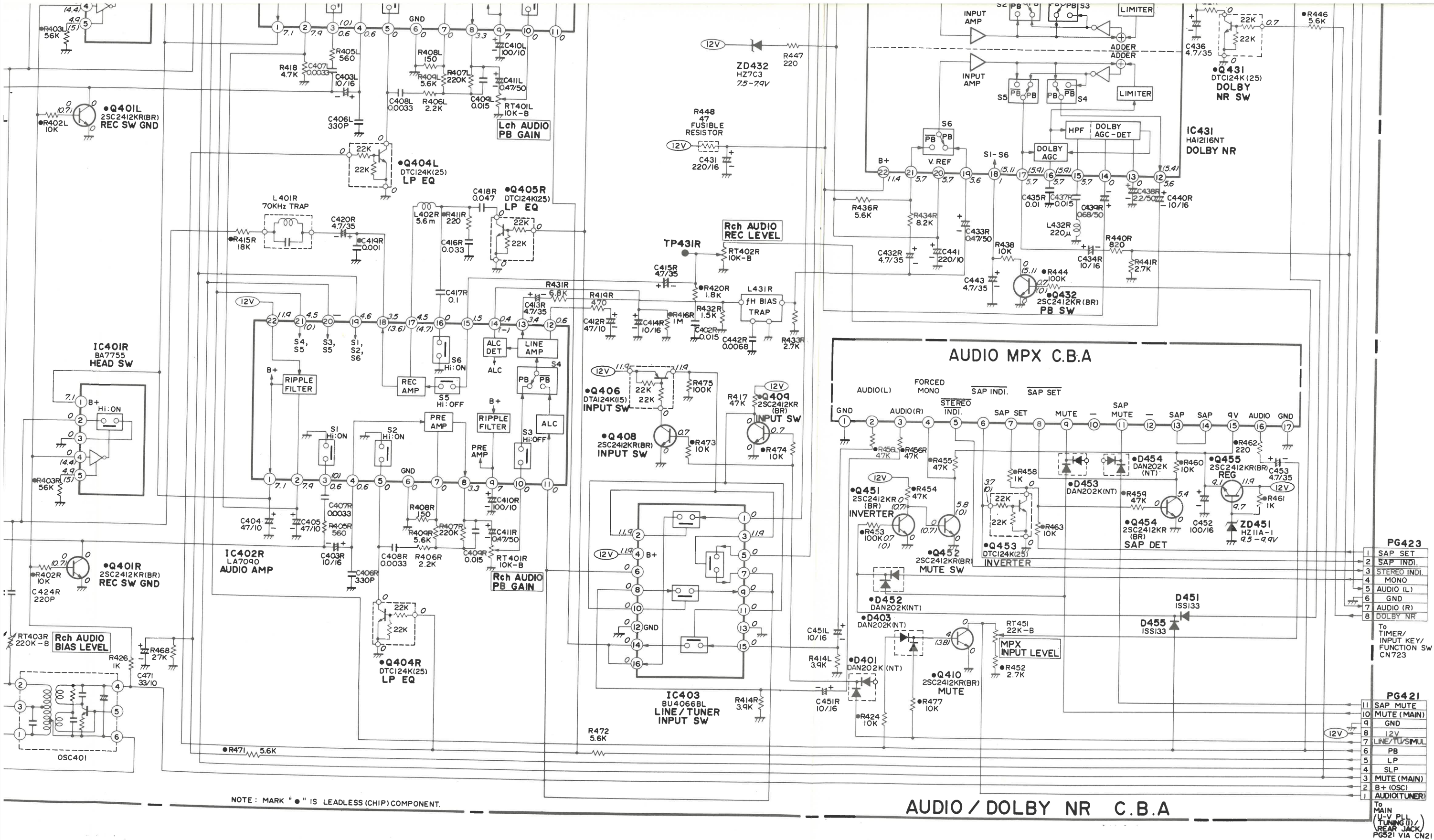
NOTE: MARK "•" IS LEADLESS (CHIP) COMPONENT.

AUD

2-W5

2-W6

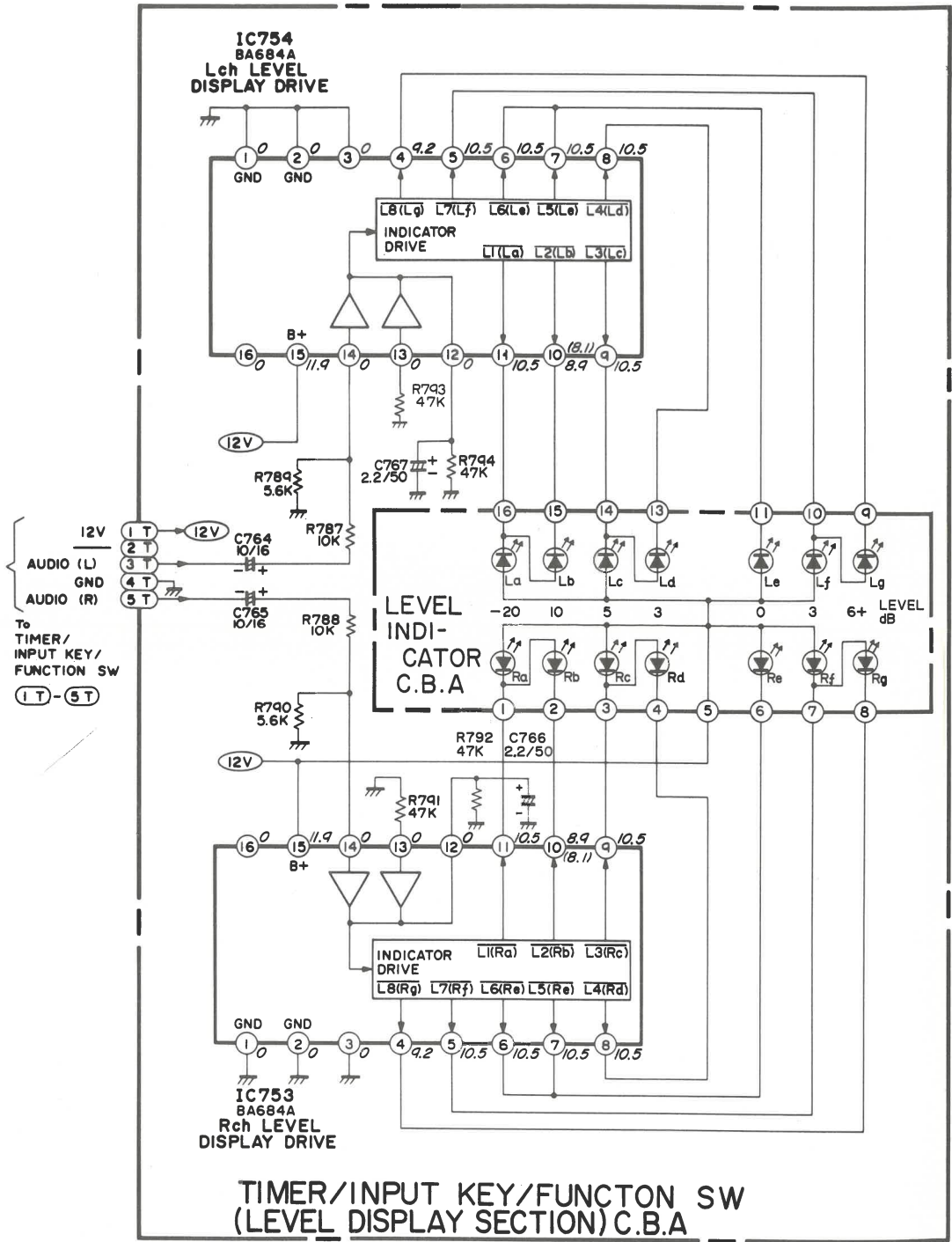
2-W7





2-X1

LEVEL DISPLAY SCHEMATIC



COMB FILTER SCHEMATIC



2-X2

ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SERVICING PRECAUTIONS SECTION OF THIS SERVICE DATA.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

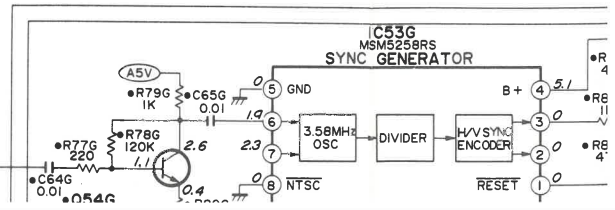
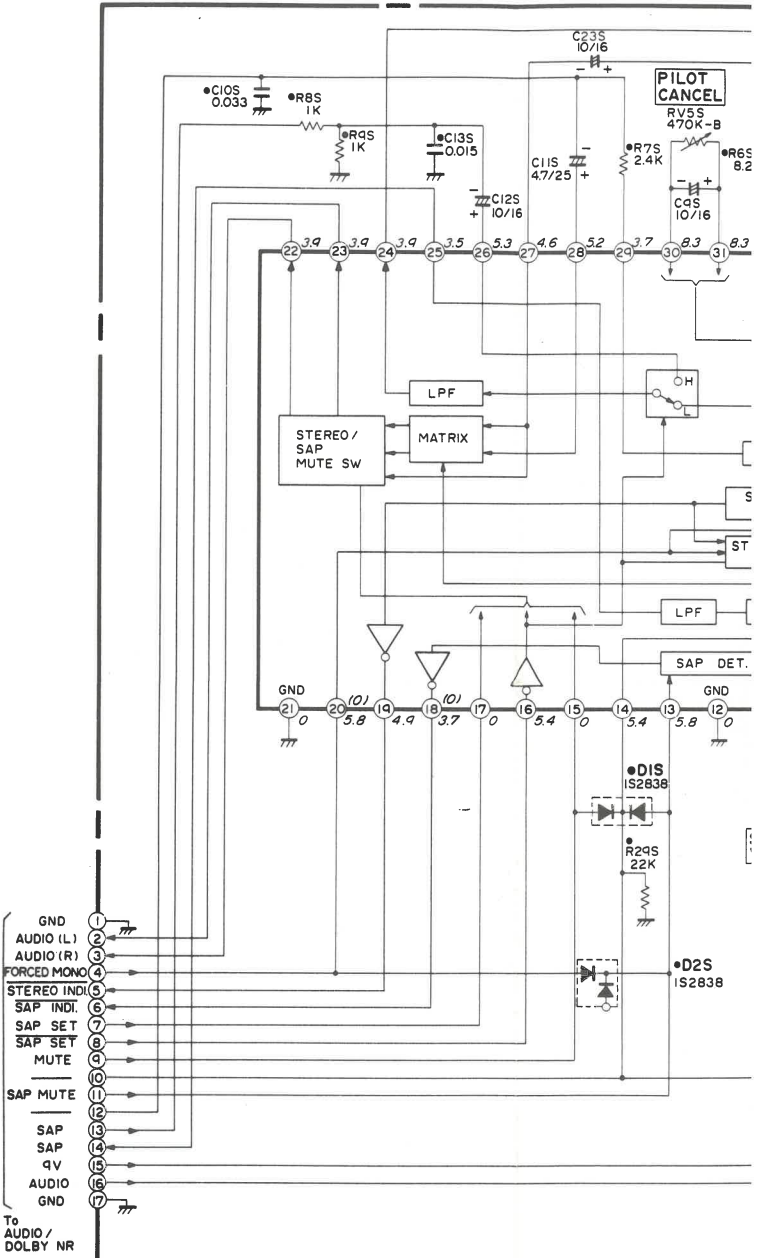
PRODUCT SAFETY NOTE COMPONENTS WITH A (\*) HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA. DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE

2-X2

2-X6

2-X3












 ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SERVICING PRECAUTIONS/SECTION OF THIS SERVICE DATA.

**CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.**

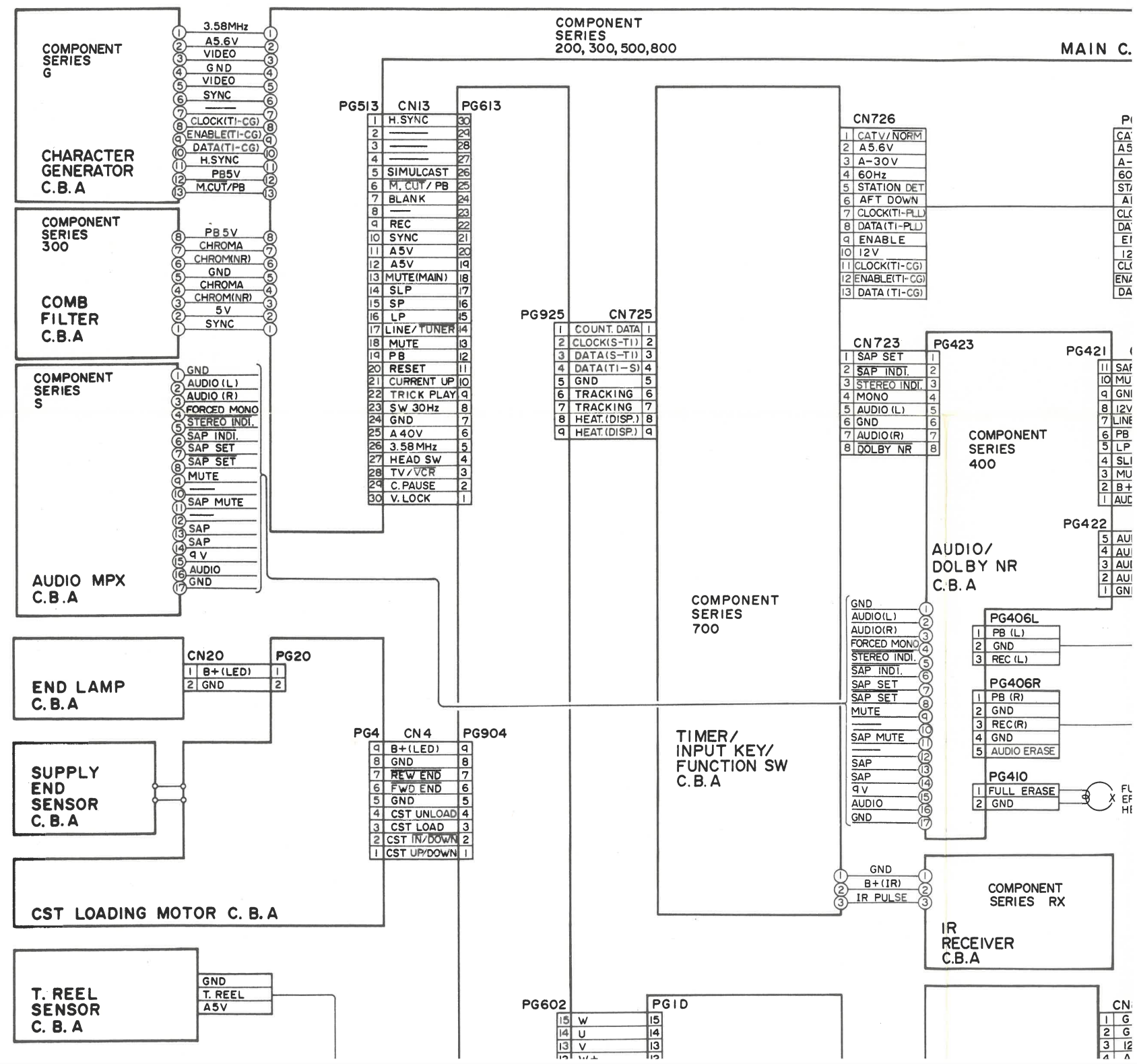
**PRODUCT SAFETY NOTE**  
COMPONENTS WITH A (\*) HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA. DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

**VOLTAGES TAKEN IN THE SP PLAY MODE**  
**( ) RECORD MODE**

2-11

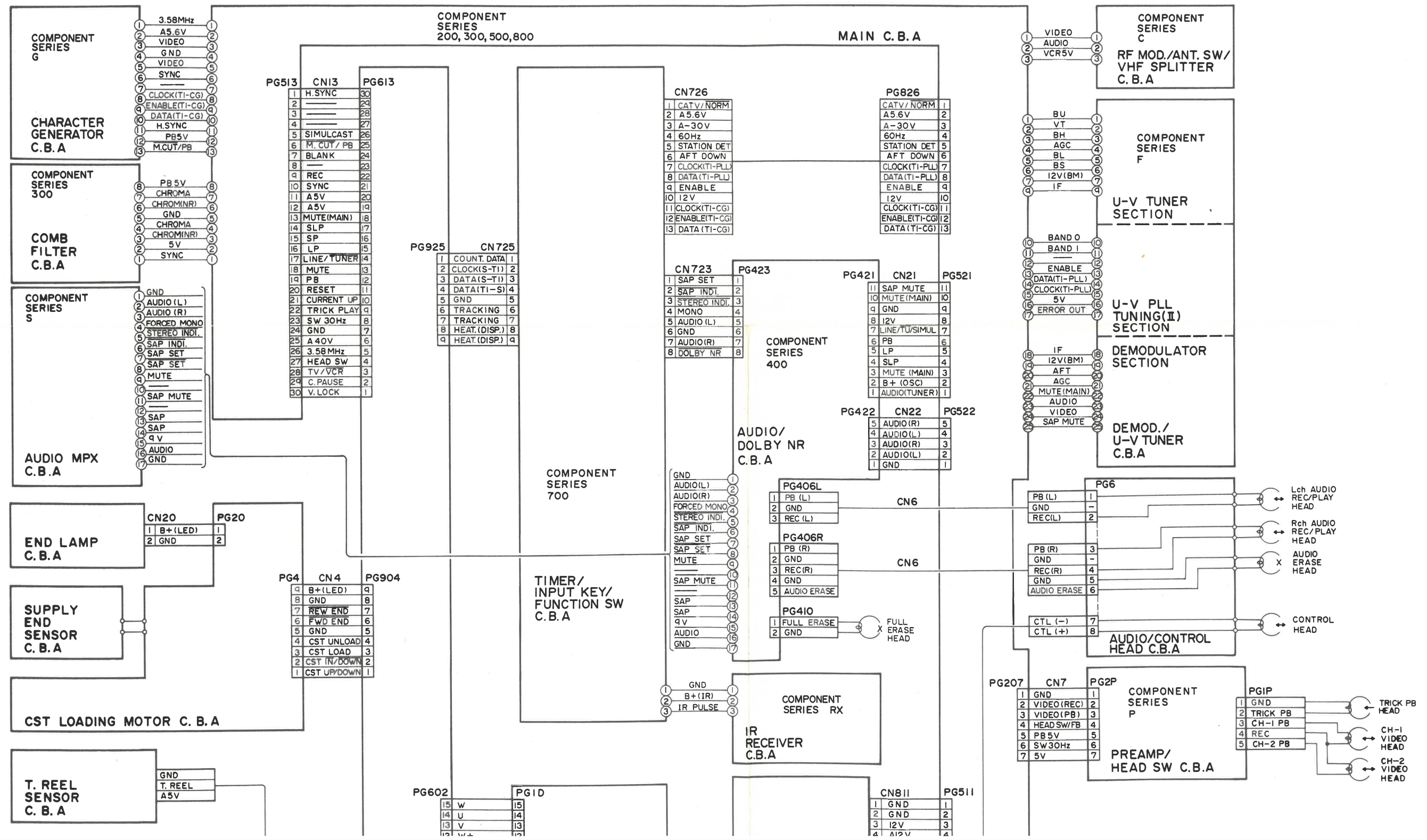
**2-15**

### INTERCONNECT WIRING DIAGRAM





## INTERCONNECT WIRING DIAGRAM

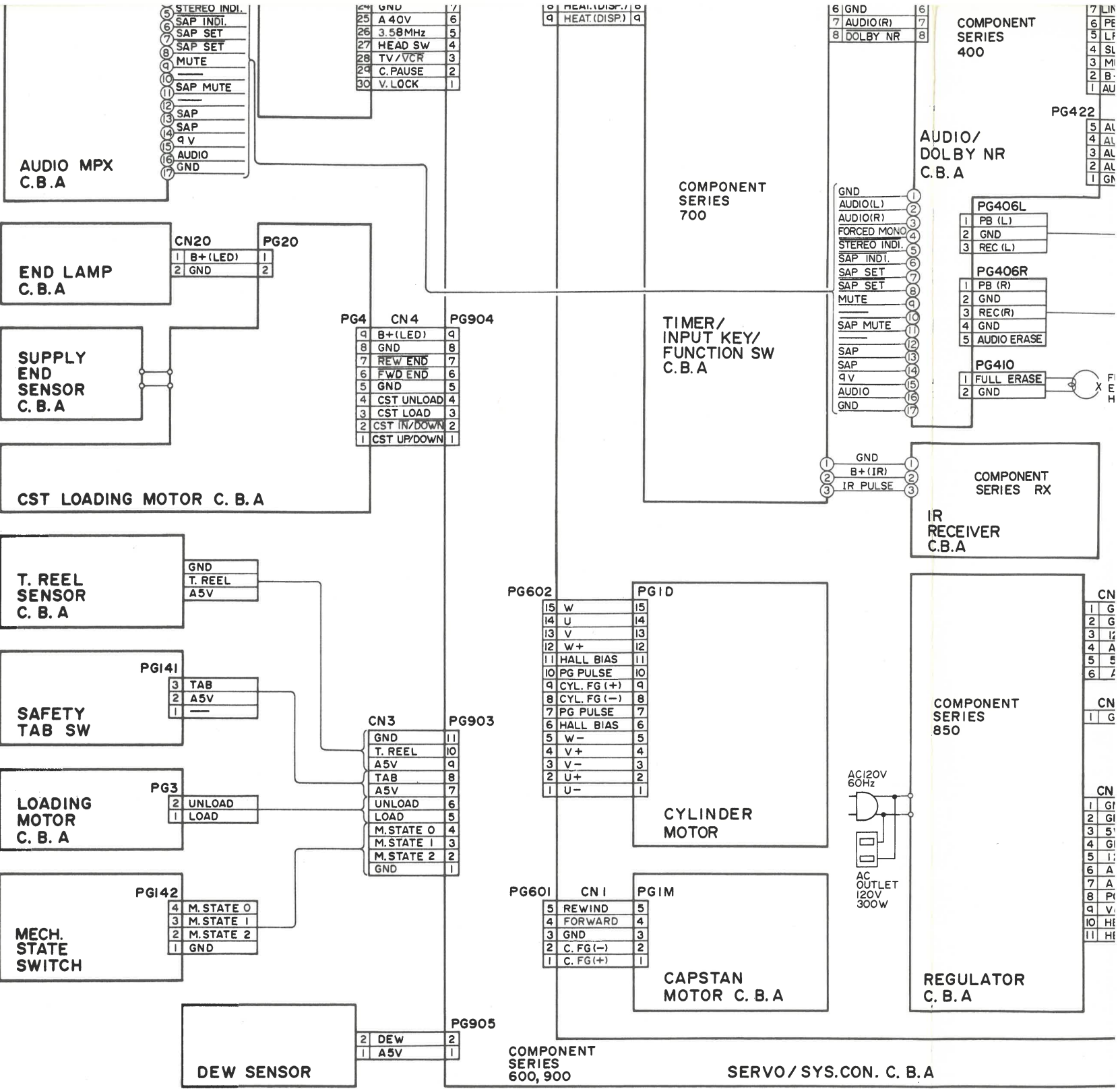


2-11

2-15

BLANK

2-15



2-16

2-17









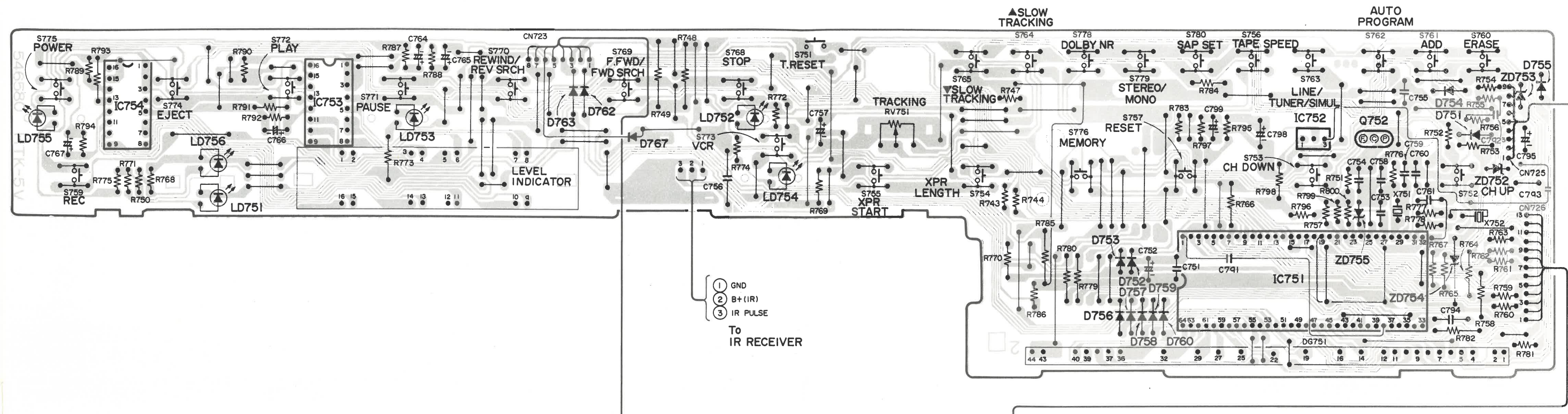


2-R2

2-R3

2-R4

## TIMER CIRCUIT BOARD



1 GND  
2 B+ (IR)  
3 IR PULSE  
To IR RECEIVER

## CN723

8	DOLBY NR
7	AUDIO (R)
6	GND
5	AUDIO (L)
4	MONO
3	STEREO INDI.
2	SAP INDI.
1	SAP SET

To AUDIO/DOLBY NR  
PG423

## CN726

13	DATA (TI-CG)
12	ENABLE (TI-CG)
11	CLOCK (TI-CG)
10	12V
9	ENABLE
8	DATA (TI-PLL)
7	CLOCK (TI-PLL)
6	AFT DOWN
5	STATION DET
4	60Hz
3	A-30V
2	A5.6V
1	CATV/NORM

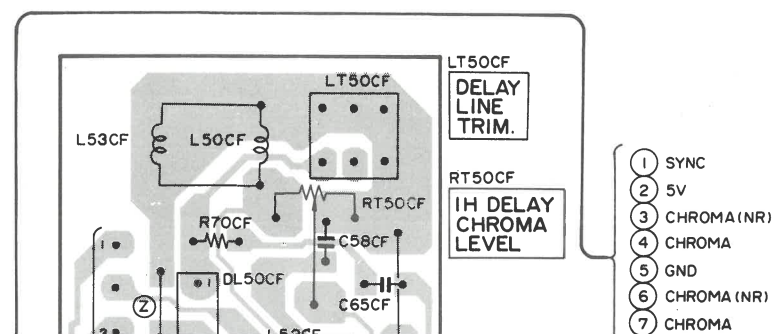
To MAIN  
(U-V PLL TUNING(1))  
REAR JACK  
PG 826

## CN725

9	HEAT. (DISP)
8	HEAT. (DISP)
7	TRACKING
6	TRACKING
5	GND
4	DATA (TI-S)
3	DATA (S-TI)
2	CLOCK (S-TI)
1	COUNT. DATA

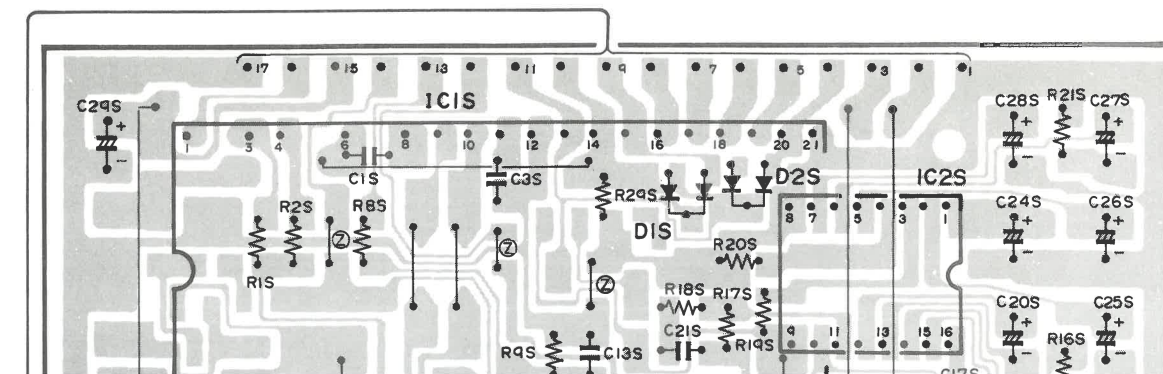
To SERVO/SYS.CON.  
(SYS./CON.)  
PG925

## COMB FILTER CIRCUIT BOARD



1 SYNC  
2 5V  
3 CHROMA (NR)  
4 CHROMA  
5 GND  
6 CHROMA (NR)  
7 CHROMA

## AUDIO MPX CIRCUIT BOARD



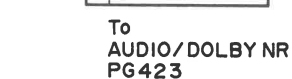
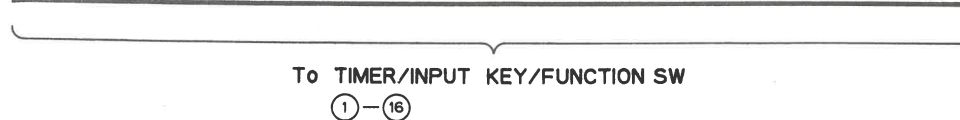
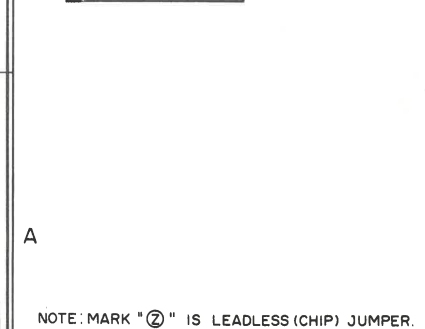
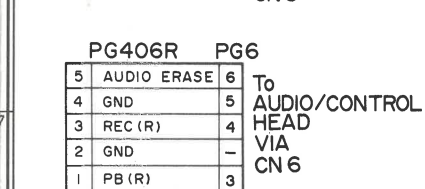
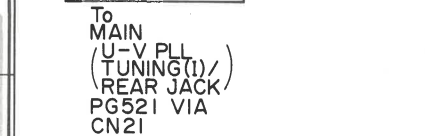
1 GND  
2 AUDIO (L)  
3 AUDIO (R)  
4 FORCED MONO  
5 STEREO INDI.  
6 SAP INDI.  
7 SAP SET  
8 SAP SET  
9 MUTE  
10  
11 SAP MUTE  
12  
13 SAP  
14 SAP  
15 9V  
16 AUDIO  
17 GND  
To AUDIO MPX

PG6  
2 To AUDIO/CONTROL  
HEAD  
VIA  
CN6

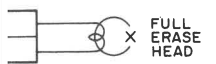
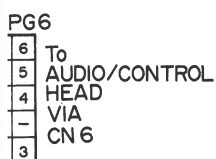
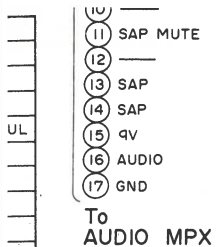
PG6  
E 6 To AUDIO/CONTROL  
HEAD  
VIA  
CN6

FULL  
ERASE  
HEAD

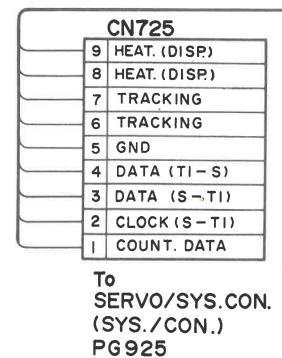
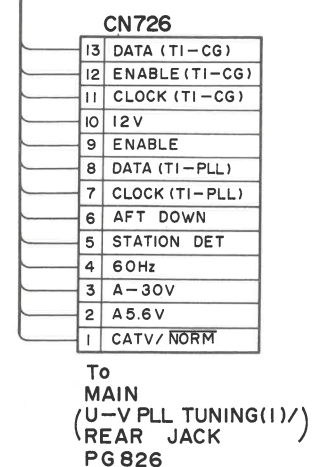
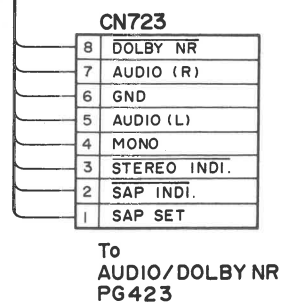




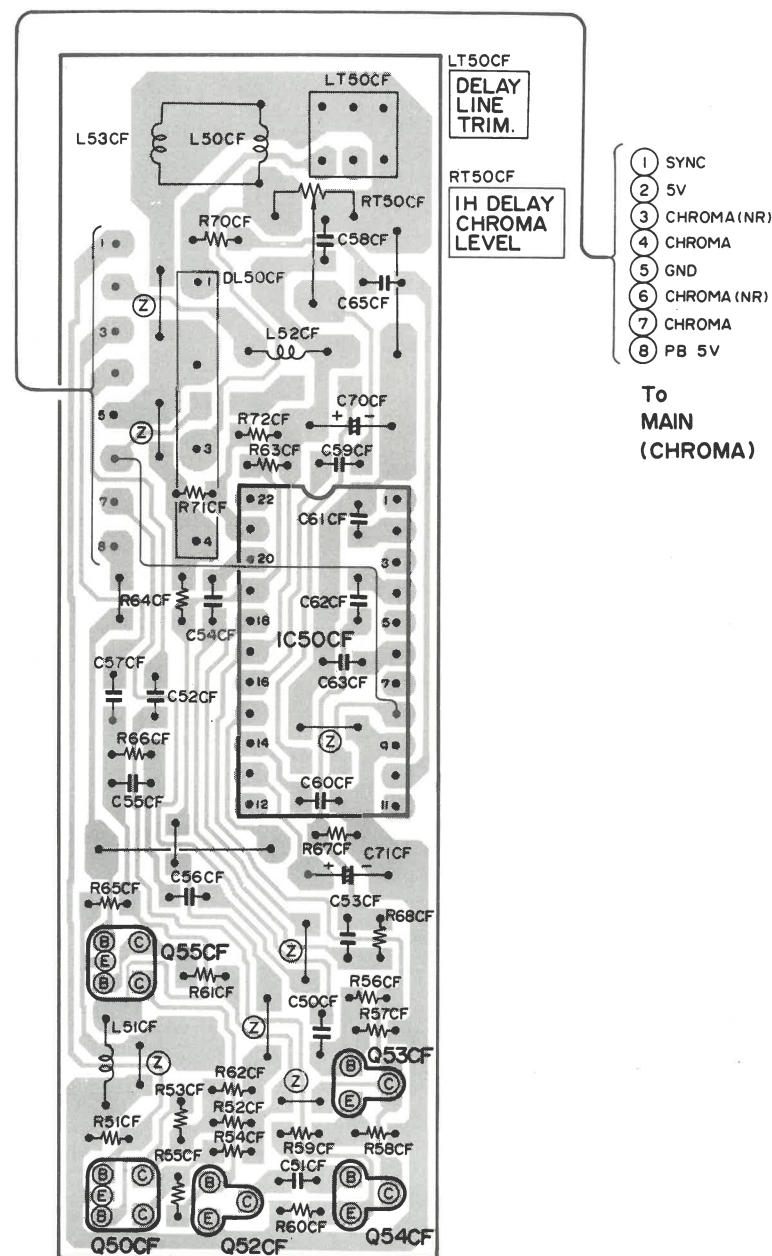




LEADLESS (CHIP) JUMPER.



# COMB FILTER CIRCUIT BOARD

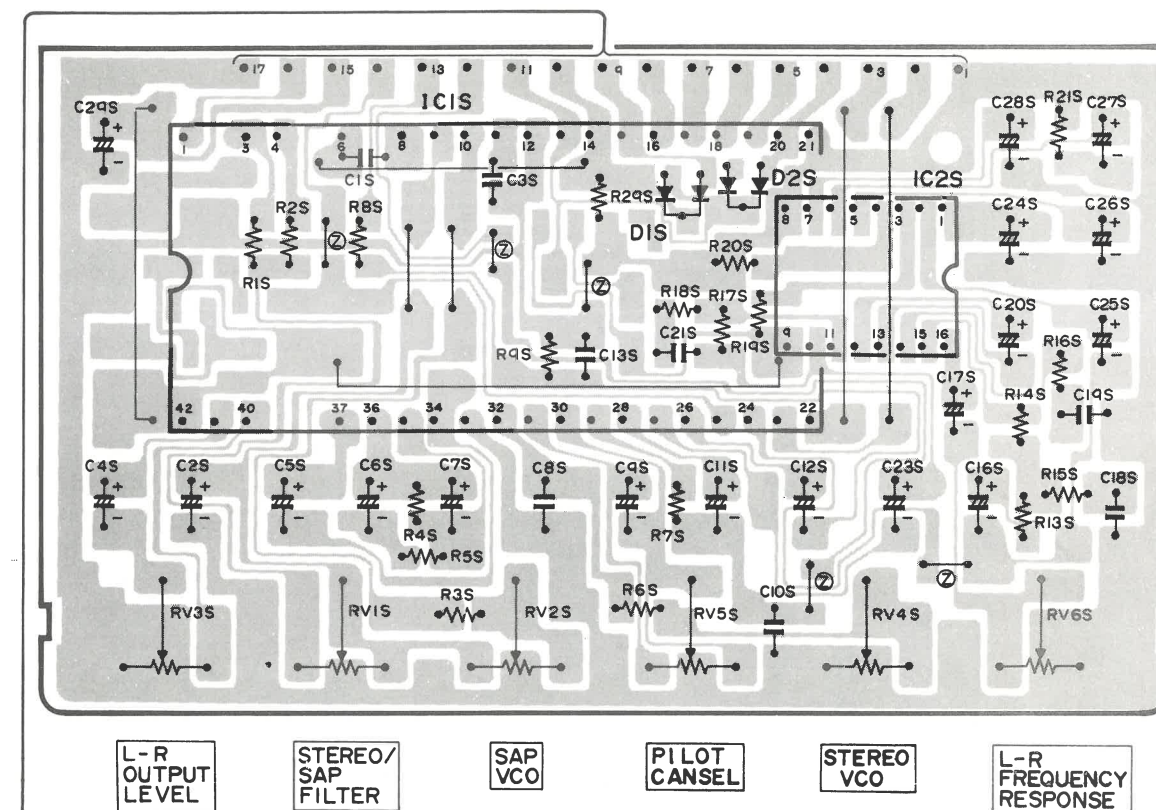


NOTE: MARK "Z" IS LEADLESS (CHIP) JUMPER

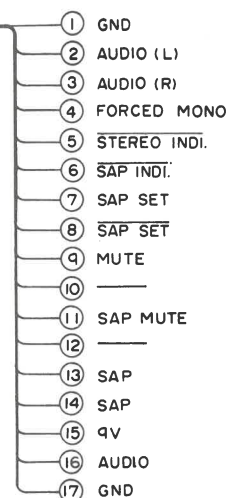
2-R6

2-R7

# AUDIO MPX CIRCUIT BOARD



NOTE: MARK "Z" IS LEADLESS (CHIP) JUMPER.



To AUDIO/DOLBY NR



MAIN CIRCUIT BOARD

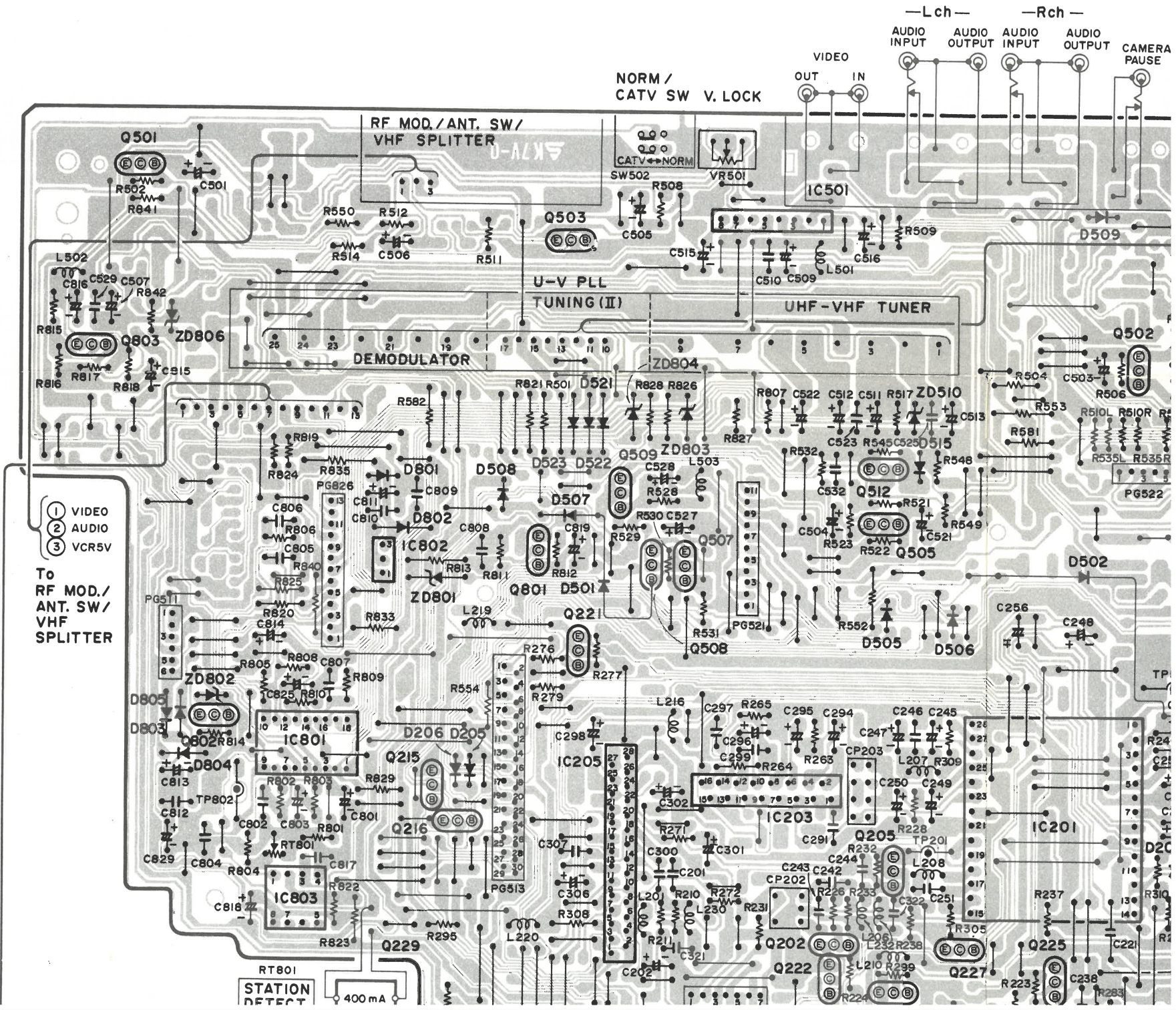
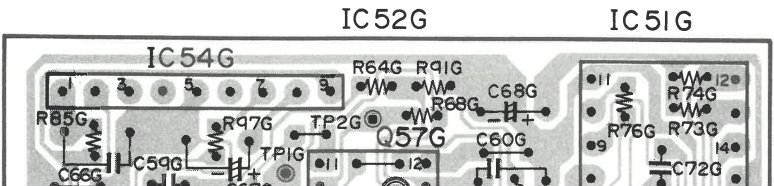
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VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE

CHARACTER GENERATOR CIRCUIT BOARD





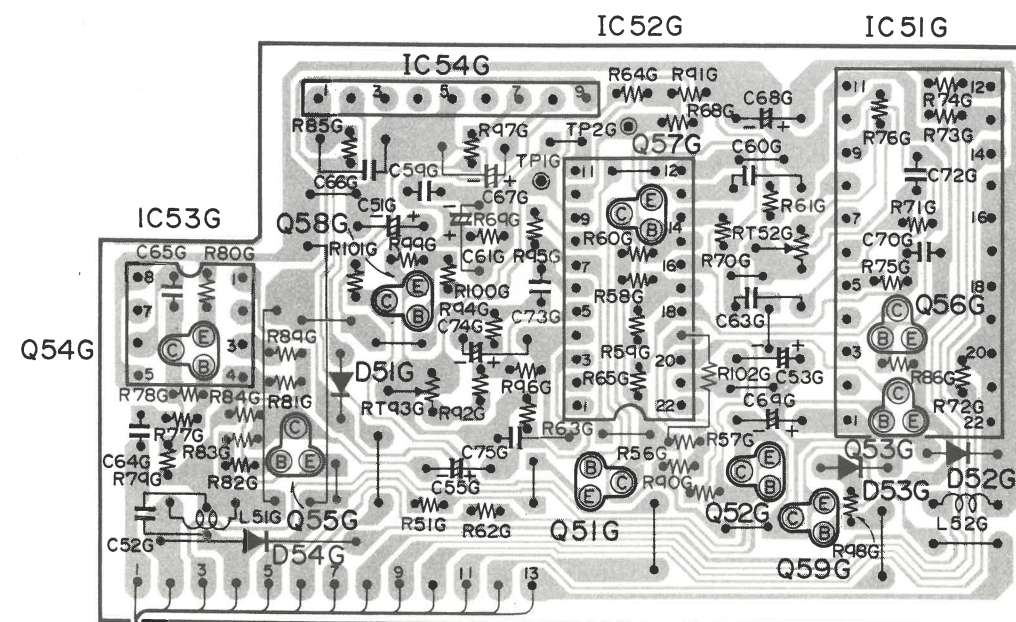




2-S1

2-S5

# CHARACTER GENERATOR CIRCUIT BOARD



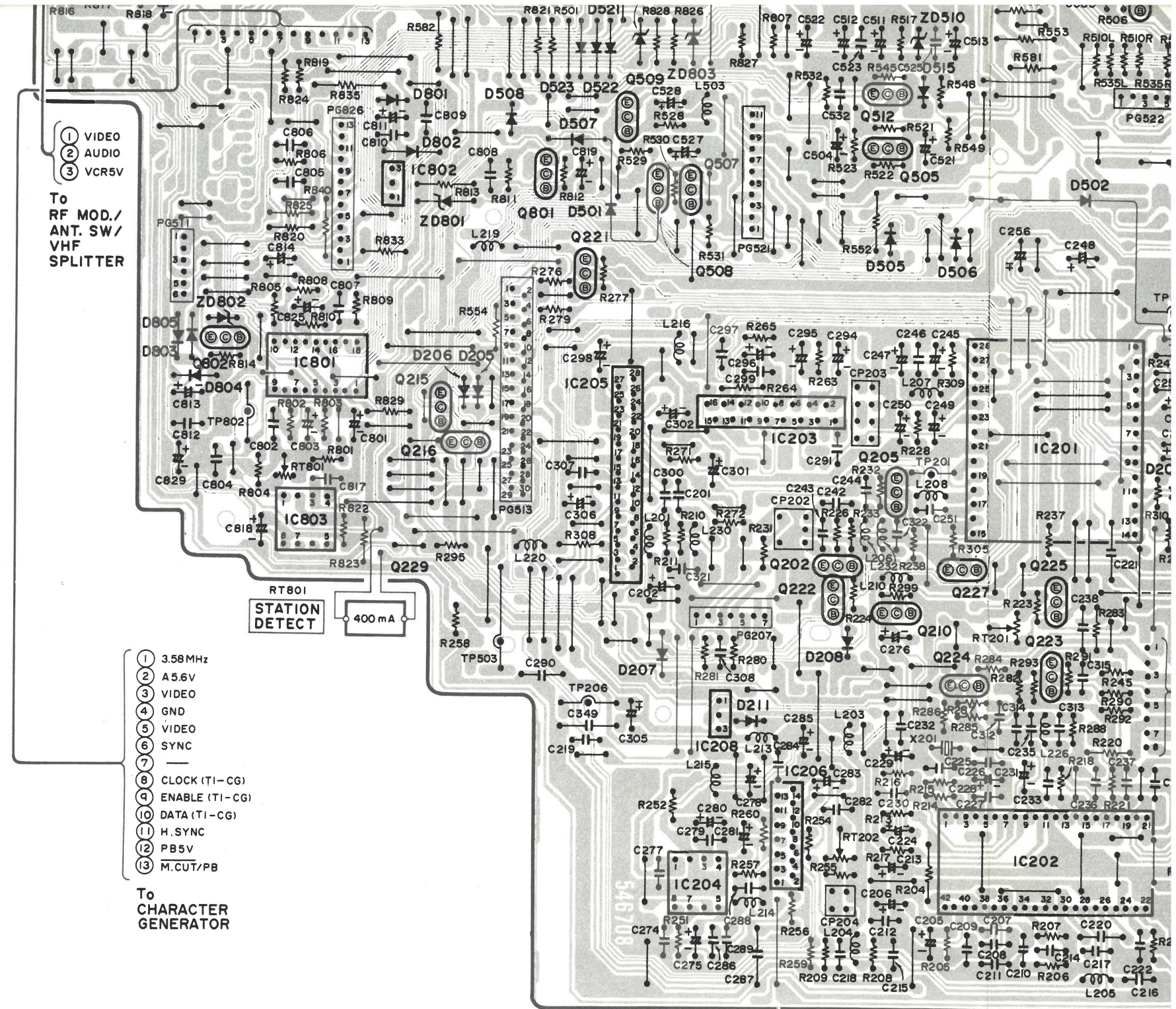
RT93G  
AFC

RT52G  
OSD HORIZONTAL  
CALIBRATION

- 1 3.58MHz
- 2 A.5.6V
- 3 VIDEO
- 4 GND
- 5 VIDEO
- 6 SYNC
- 7 —
- 8 CLOCK (TI-CG)
- 9 ENABLE (TI-CG)
- 10 DATA (TI-CG)
- 11 H. SYNC
- 12 PB5V
- 13 M.CUT/PB

To  
MAIN  
(U-V PLL  
TUNING(I)/  
REAR JACK)

2-S5



- 1 3.58MHz
- 2 A.5.6V
- 3 VIDEO
- 4 GND
- 5 VIDEO
- 6 SYNC
- 7 —
- 8 CLOCK (TI-CG)
- 9 ENABLE (TI-CG)
- 10 DATA (TI-CG)
- 11 H. SYNC
- 12 PB5V
- 13 M.CUT/PB

To  
CHARACTER  
GENERATOR

2-S6

RT202  
IH DELAY LINE  
OUTPUT LEVEL

RT201  
CHROMA  
CANCELER

2-S7

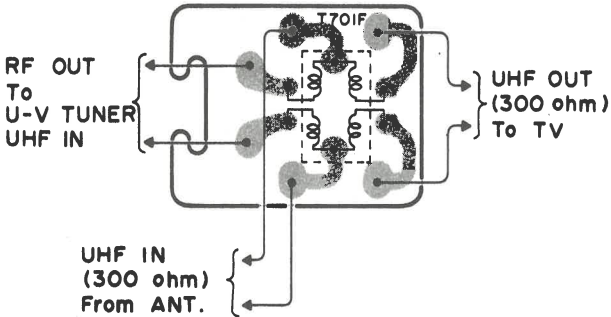






2-T1

UHF SPLITTER CIRCUIT BOARD

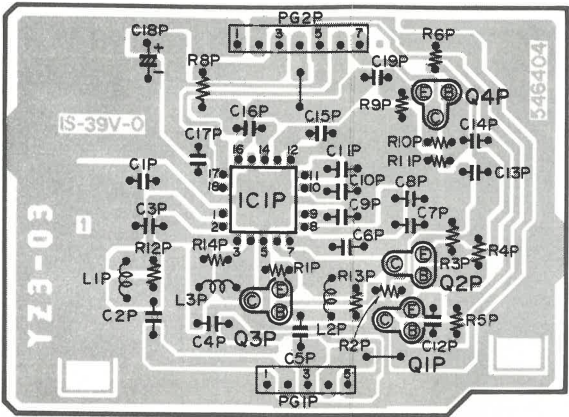


2-T1

2-T5

2-T2

PREAMP/HEAD SWITCH CIRCUIT BOARD



PGIP	
1	GND
2	TRICK PB
3	CH-1 PB
4	REC
5	CH-2 PB

To VIDEO HEADS

PG2P	
1	GND
2	VIDEO (REC)
3	VIDEO (PB)
4	HEAD SW/FB
5	PB5V
6	SW30Hz
7	5V

To MAIN (LUMA) PG207 VIA CN7

2-T2

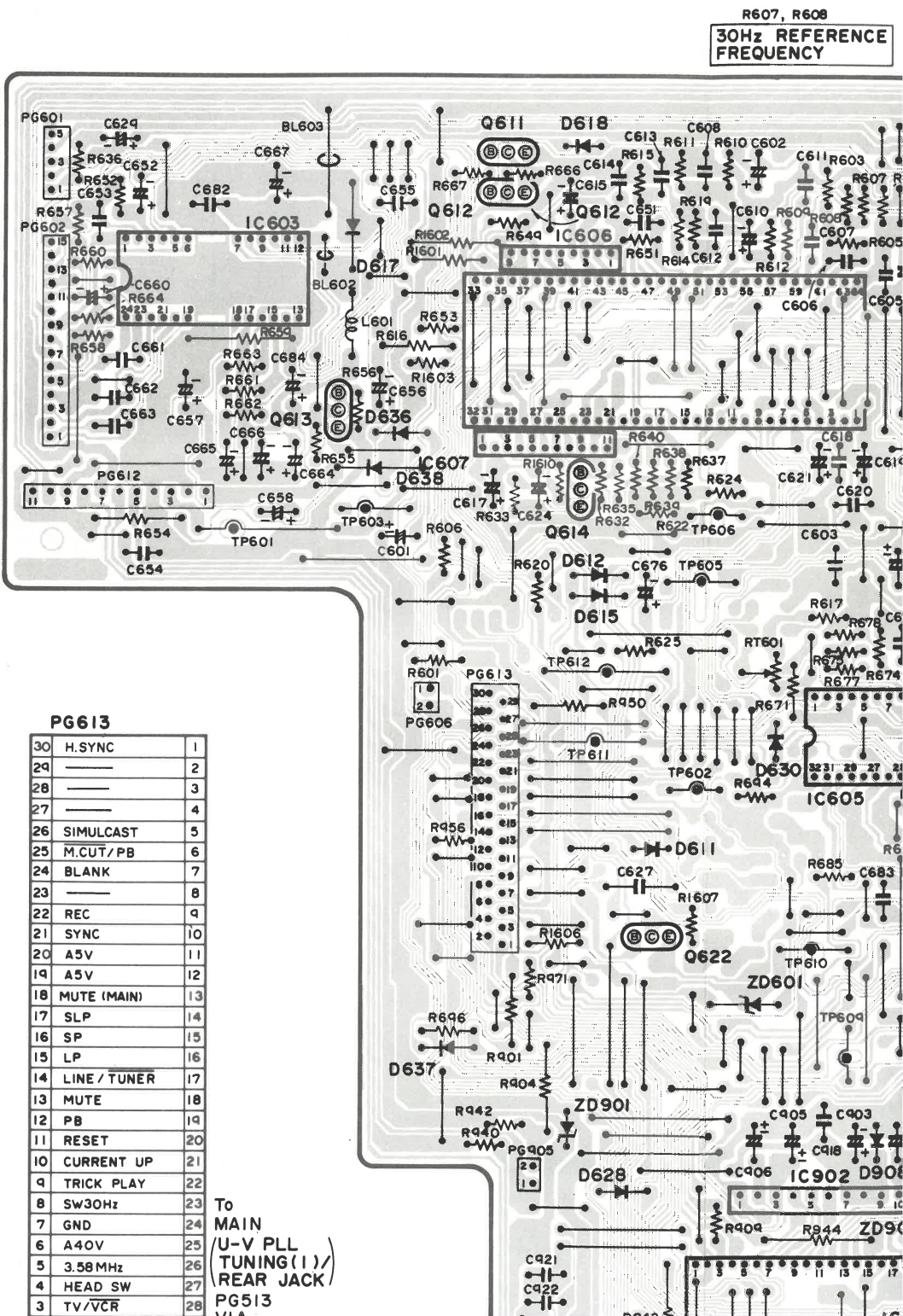
2-T6

REGULATOR CIRCUIT BOARD



2-T3

SERVO/SYSTEM C



PG613	
30	H.SYNC
29	---
28	---
27	---
26	SIMULCAST
25	M.CUT/PB
24	BLANK
23	---
22	REC
21	SYNC
20	A5V
19	A5V
18	MUTE (MAIN)
17	SLP
16	SP
15	LP
14	LINE / TUNER
13	MUTE
12	PB
11	RESET
10	CURRENT UP
9	TRICK PLAY
8	SW30Hz
7	GND
6	A40V
5	3.58MHz
4	HEAD SW
3	TV/VCR

To MAIN (U-V PLL TUNING(1)) (REAR JACK) PG513 VIA







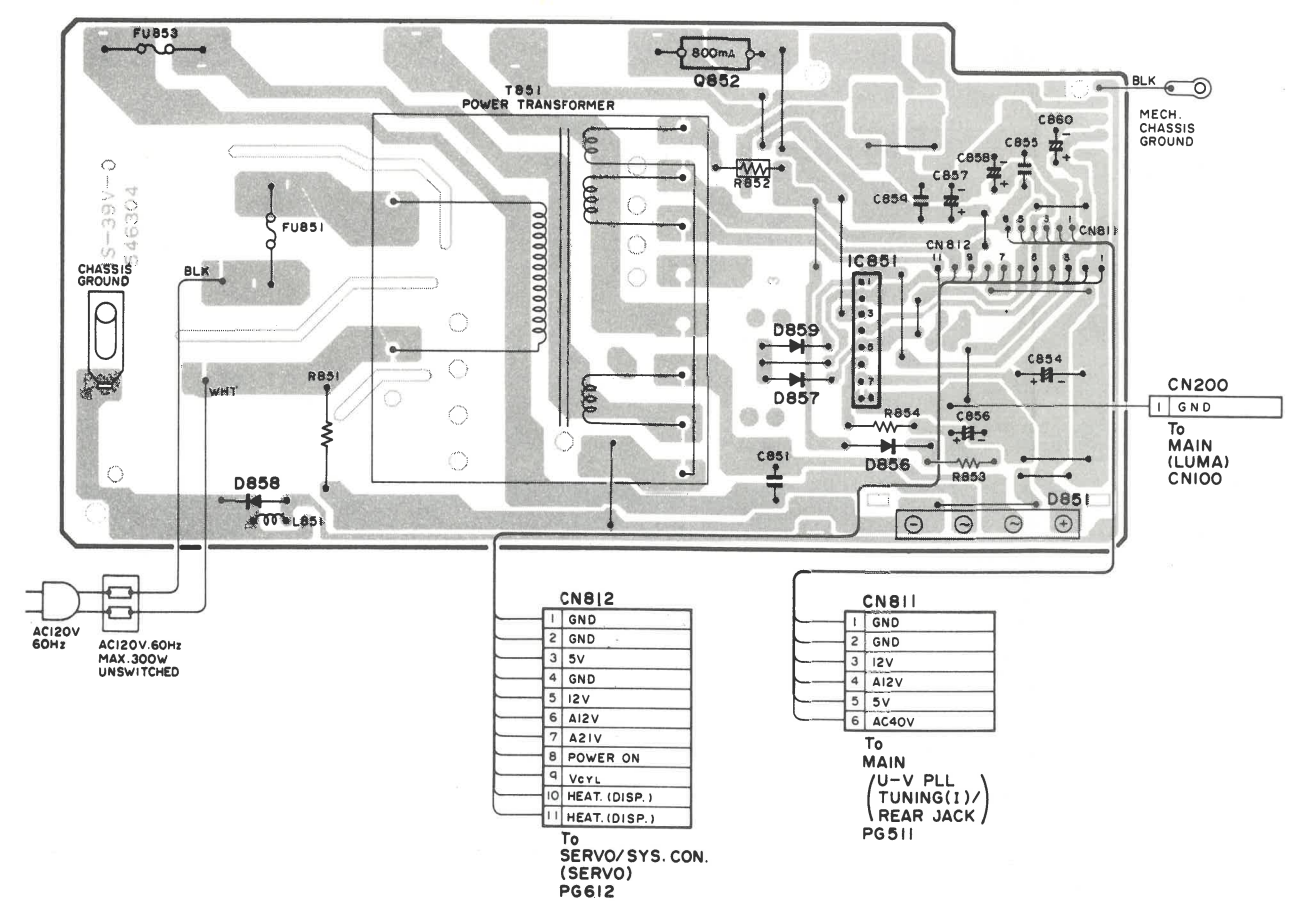
2-T1

2-T5

2-T2

2-T6

REGULATOR CIRCUIT BOARD



2-T5

2-T6

PG613		
30	H. SYNC	1
29		2
28		3
27		4
26	SIMULCAST	5
25	M. CUT / PB	6
24	BLANK	7
23		8
22	REC	9
21	SYNC	10
20	A5V	11
19	A5V	12
18	MUTE (MAIN)	13
17	SLP	14
16	SP	15
15	LP	16
14	LINE / TUNER	17
13	MUTE	18
12	PB	19
11	RESET	20
10	CURRENT UP	21
9	TRICK PLAY	22
8	SW30Hz	23
7	GND	24
6	A40V	25
5	3.58MHz	26
4	HEAD SW	27
3	TV/VCR	28
2	C. PAUSE	29
1	V. LOCK	30

To MAIN  
(U-V PLL  
TUNING(1)/  
REAR JACK)  
PG513  
VIA  
CN13

2-T7

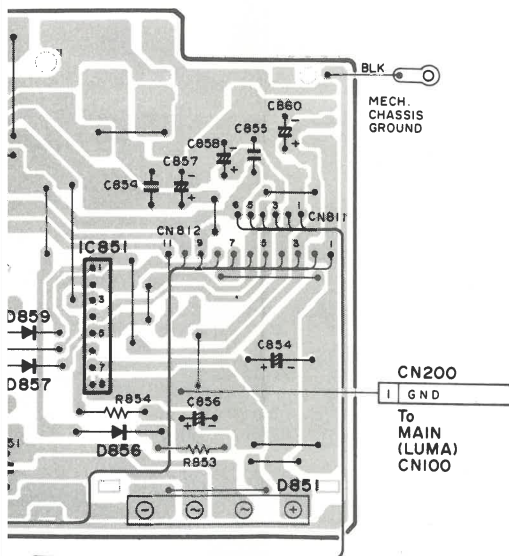


5	PB5V	VIA
6	SW30Hz	CN7
7	5V	

2-T2

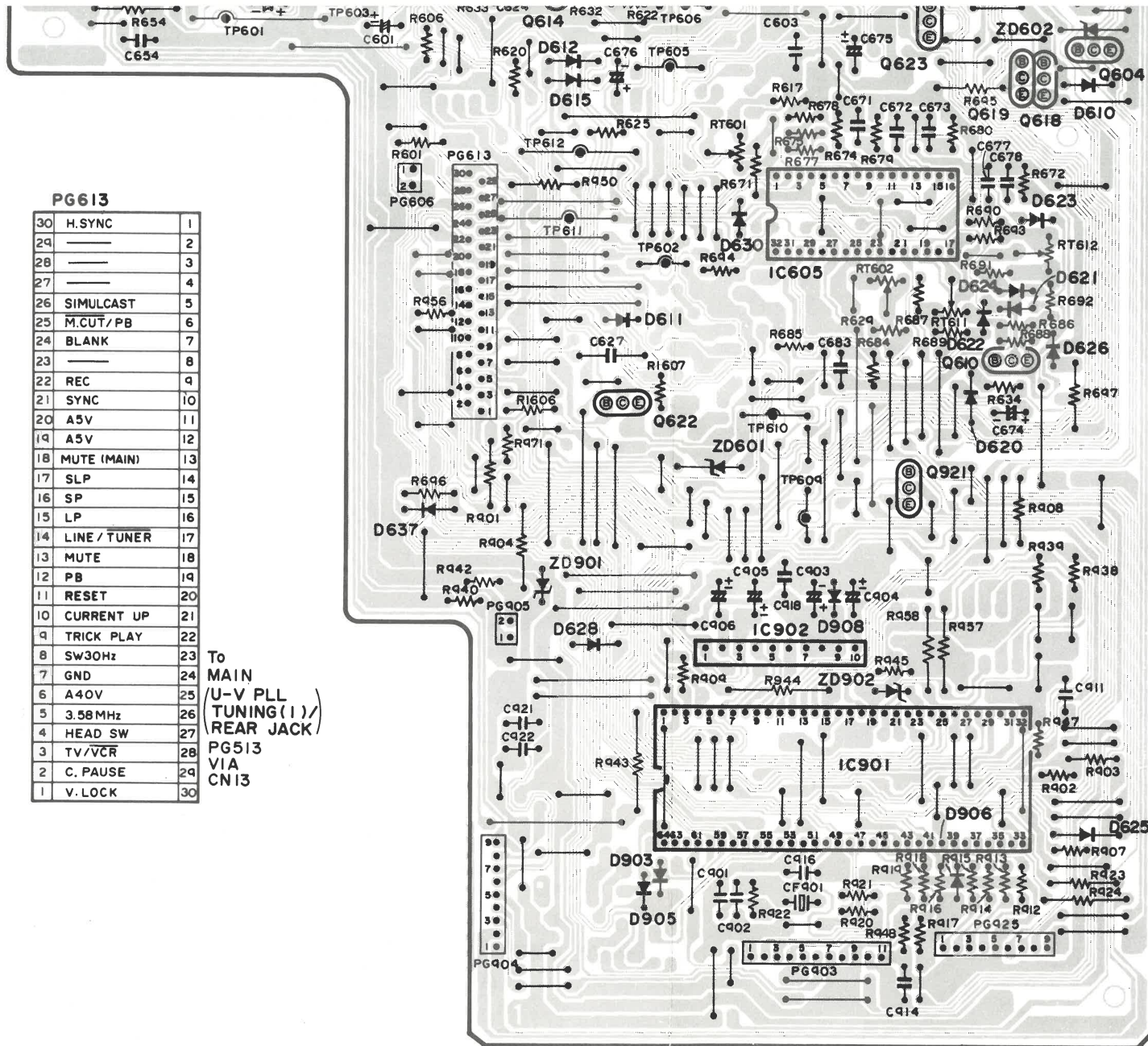
2-T6

ARD



PG613		
30	H.SYNC	1
29	---	2
28	---	3
27	---	4
26	SIMULCAST	5
25	M.CUT/PB	6
24	BLANK	7
23	---	8
22	REC	9
21	SYNC	10
20	A5V	11
19	A5V	12
18	MUTE (MAIN)	13
17	SLP	14
16	SP	15
15	LP	16
14	LINE / TUNER	17
13	MUTE	18
12	PB	19
11	RESET	20
10	CURRENT UP	21
9	TRICK PLAY	22
8	SW30Hz	23
7	GND	24
6	A40V	25
5	3.58MHz	26
4	HEAD SW	27
3	TV/VCR	28
2	C. PAUSE	29
1	V. LOCK	30

To  
MAIN  
(U-V PLL  
TUNING(1)/  
REAR JACK)  
PG513  
VIA  
CN13



RT601  
PG SHIFTER

RT612  
SP SLOW  
FEED SPEED

RT602  
TRACKING  
PRESET

RT611  
SLP SLOW  
FEED SPEED

10	PG PULSE
9	CYL. FG(+)
8	CYL. FG(-)
7	PG PULSE
6	HALL BIAS
5	W-
4	V+
3	V-
2	U+
1	U-

To  
CYL. MOTOR  
PG1D

PG612	
1	GND
2	GND
3	5V
4	GND
5	I2V
6	A12V
7	A21V
8	POWER ON
9	Vcyl
10	HEAT.(DISP)
11	HEAT.(DISP)

To  
REGULATOR  
CN812

PG903	
11	GND
10	T.REEL
9	A5V
8	TAB
7	A5V
6	UNLOAD
5	LOAD
4	M.STATE 0
3	M.STATE 1
2	M.STATE 2
1	GND

To  
T.REEL SENSOR

To SAFETY TAB SW  
PG141 VIA CN3  
To LOADING MOTOR  
PG3 VIA CN3

To  
MECH.STATE SW  
PG142 VIA  
CN3

1	A5V
To DEW SENSOR	

PG925	
9	HEAT.(DISP.)
8	HEAT.(DISP.)
7	TRACKING
6	TRACKING
5	GND
4	DATA (T1-S)
3	DATA (S-T1)
2	CLOCK (S-T1)
1	COUNT. DATA

To  
TIMER/  
INPUT KEY/  
FUNCTION SW  
CN725

PG 606	
1	CTL (-)
2	CTL (+)

To  
AUDIO/  
CONTROL  
HEAD

2-T6

2-T7



2-U1

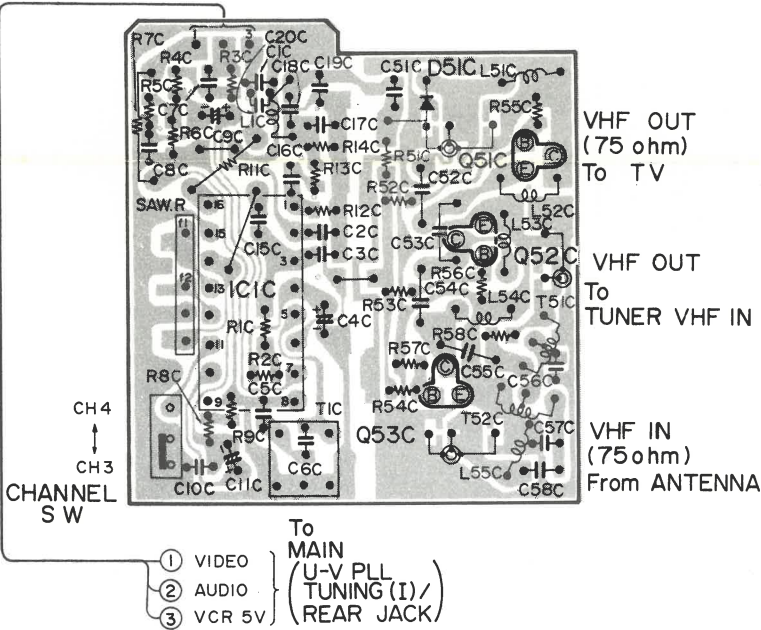
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SERVICING PRECAUTIONS SECTION OF THIS SERVICE DATA.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

PRODUCT SAFETY NOTE  
COMPONENTS WITH A (\*) HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA. DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

VOLTAGES TAKEN IN THE SP PLAY MODE  
( ) RECORD MODE

RF MODULATOR/ANTENNA SWITCH/VHF SPLITTER CIRCUIT BOARD



2-U1

2-U5

REEL SENSOR CIRCUIT BOARD

TAKE-UP REEL  
SENSOR C.B.A

2-U2

2-U6

END LAMP/END SENSORS/CASSETTE LOADING MTR. CIRCUIT BOARDS

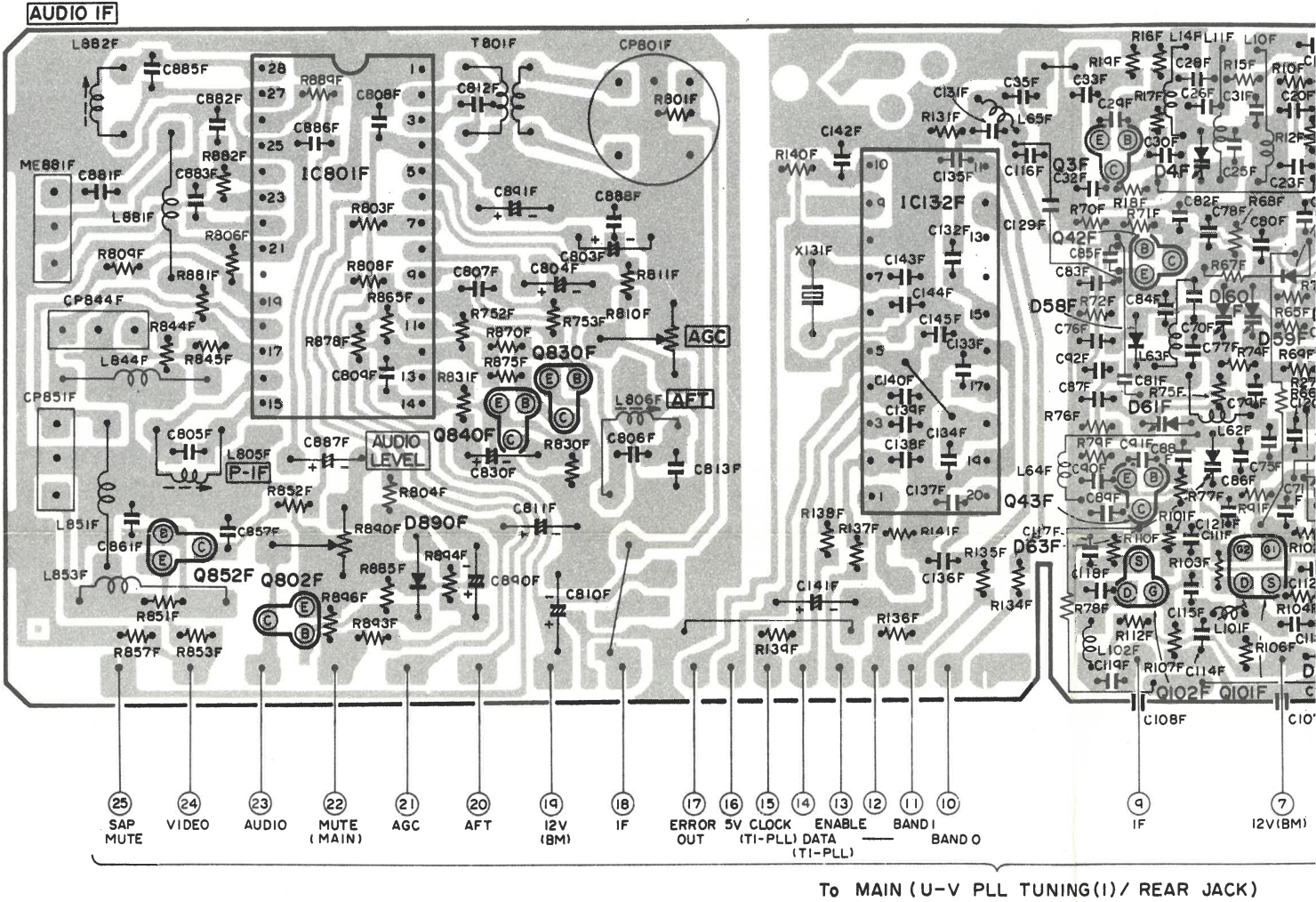
2-U3

2-U3

2-U7

AUDIO CONTROL HEAD CIRCUIT BOARD

DEMODULATOR/U-V TUNER CIRCUIT BOARD



2-U2

2-U6

END LAMP/END SENSORS/CASSETTE LOADING MTR. CIRCUIT BOARDS

2-U3

2-U7

AUDIO CONTROL HEAD CIRCUIT BOARD

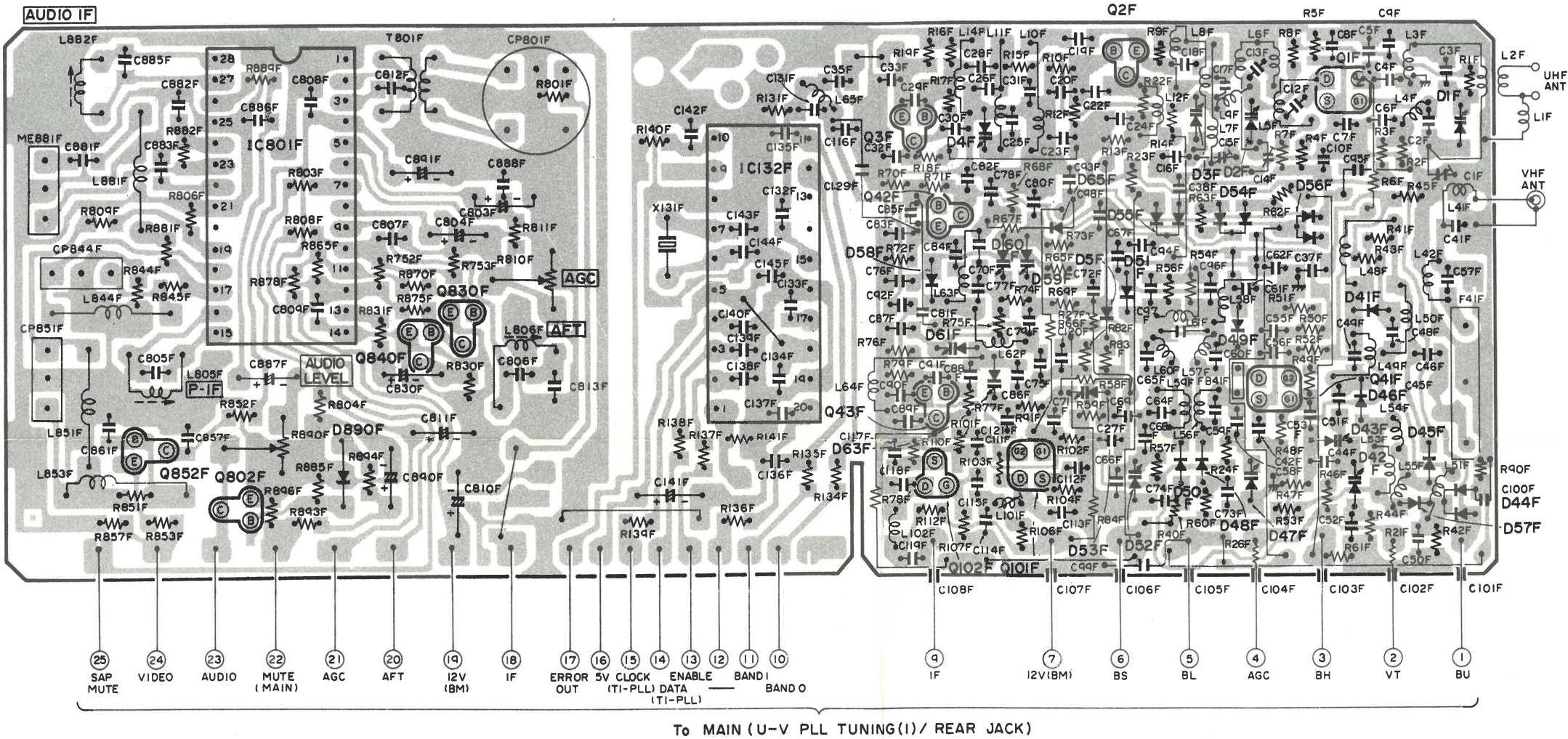


2-U2

2-U3

2-U4

DEMODULATOR/U-V TUNER CIRCUIT BOARD



2-U2

2-U3

2-U4

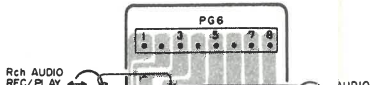
2-U6

2-U7

2-U8

END LAMP/END SENSORS/CASSETTE LOADING MTR. CIRCUIT BOARDS

AUDIO CONTROL HEAD CIRCUIT BOARD





**2-U5**

**2-U7**

## REEL SENSOR CIRCUIT BOARD

**2-U5**

### END LAMP/END SENSORS/CASSETTE LOADING MTR. CIRCUIT BOARDS

**2-U6**

## AUDIO CONTROL HEAD CIRCUIT BOARD

**2-U7**



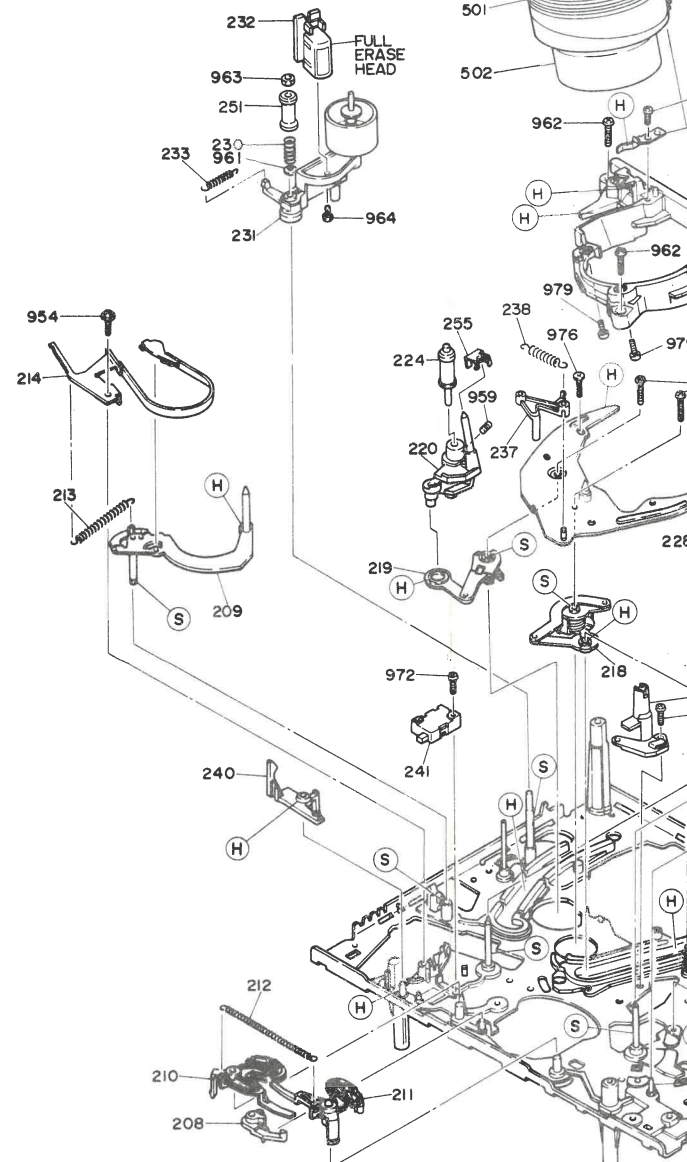
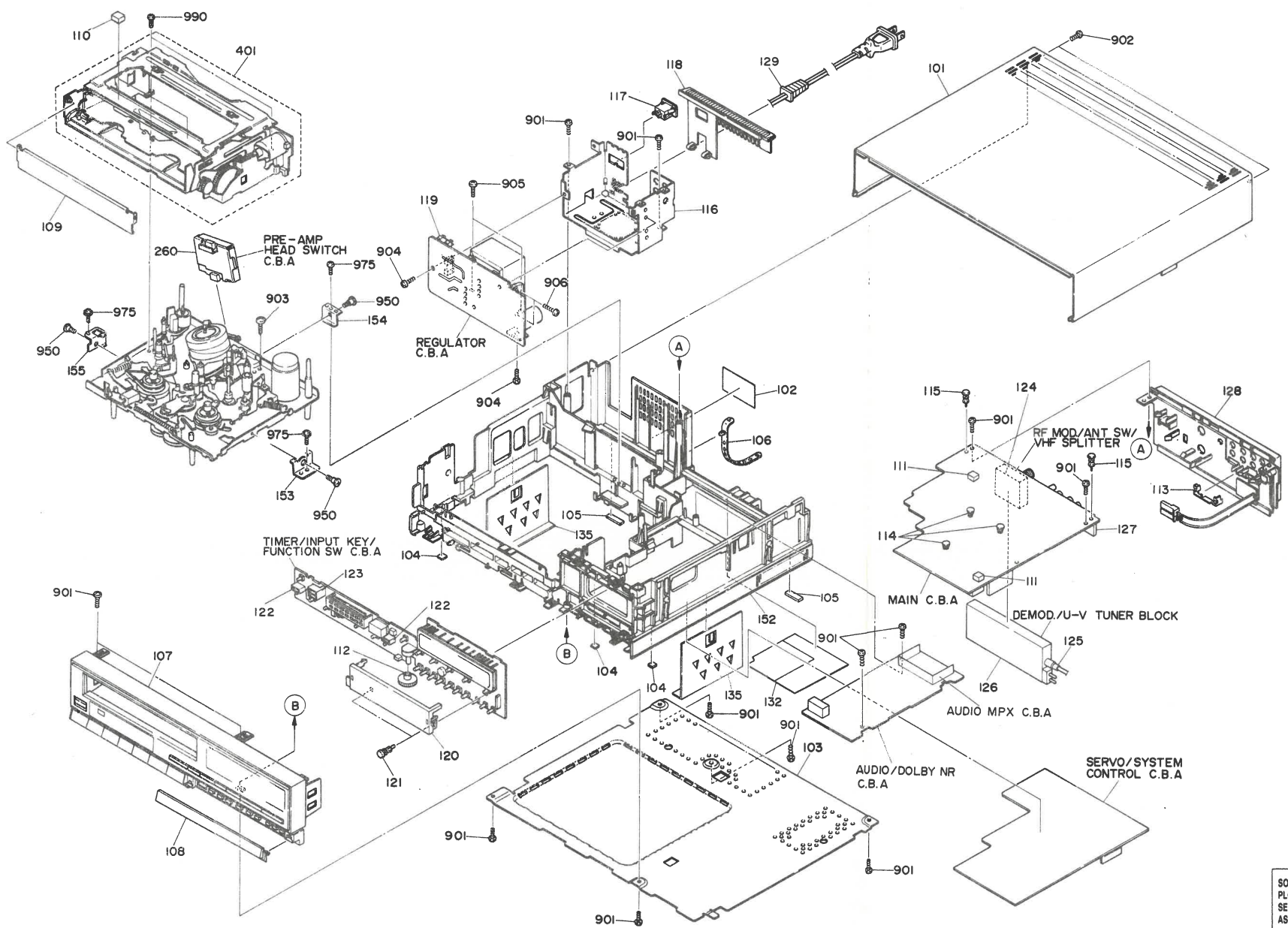


1-U1

INSTRUMENT ASSEMBLY EXPLODED VIEW

1-U2

1-U3

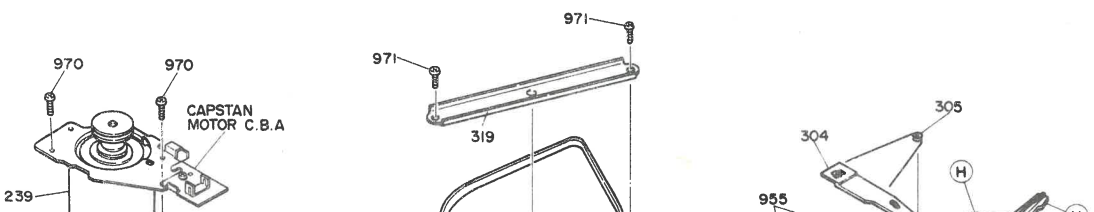


1-U5  
BOTTOM SIDE MECHANISM EXPLODED VIEW

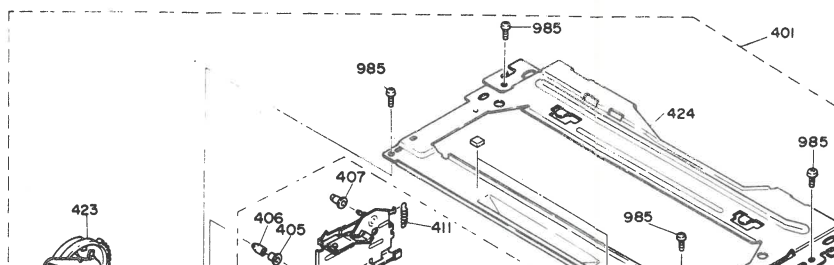
1-U6

1-U7

CASSETTE LOADING MECHANISM EXPLODED VIEW



REMOTE TRANSMITTER EXPLODED VIEW



SOME PARTS WITH ITEM NUMBERS ON EXPLODED VIEWS MAY NOT BE AVAILABLE SEPARATELY, OR MAY BE AVAILABLE ONLY AS PART OF AN ASSEMBLY.

(H) = GREASE (Stock no. 147347)  
(S) = OIL (Stock no. 147468)



### XY EXPLODED VIEW



(H) = GREASE (Stock no. 147347)  
 (S) = OIL (Stock no. 147468)

**1-U3**

### TRANSPORT MECHANISM EXPLODED VIEW



1-U4

1-U4

1-U8

